ANNUAL REPORT OF PROGRAM ACTIVITIES

CLINICAL CENTER

FISCAL YEAR 1972

U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE · NATIONAL INSTITUTES OF HEALTH

ANNUAL REPORT

OF

PROGRAM ACTIVITIES

U.S. National Institutes of Health CLINICAL CENTER

Fiscal Year 1972

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Public Health Service National Institutes of Health

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CLINICAL CENTER DEPARTMENT REPORTS

Fiscal Year 1972

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2. Blood Bank Department
3. Clinical Pathology Department
4. Department of Diagnostic Radiology
5. Employee Health Service Branch
6. Environmental Sanitation Control Department
7. Medical Record Department
8. Department of Nuclear Medicine
9. Nursing Department
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July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

ANESTHESIOLOGY DEPARTMENT

CC-61
Serial No.

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July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

ANESTHESIOLOGY DEPARTMENT

CC-61
Serial No.

GENERAL

The Anesthesiology Department of the Clinical Center is a professional service department. Its primary responsibility is the provision of anesthesia, inhalation therapy, and related services for patients hospitalized at the Clinical Center. Our relatively small staff, made up of qualified physician anesthesiologists, nurse anesthetists, medical technicians, and secretarial personnel, averaged 18 persons during the year. Physician and nurse anesthetists administered anesthesia and gave related supportive treatment for patients having major surgery or diagnostic studies that required general anesthesia or close medical surveillance during procedures performed under local anesthesia. Inhalation therapy technicians were responsible for providing equipment and technical assistance for all forms of respiratory therapy utilizing medical gases, nebulized medications, and mechanical measures for respiratory support. Two of our staff anesthesiologists carried out research studies in connection with their clinical work and in collaboration with NCI investigators.

The number of Anesthesiology Department personnel on duty was categorized as follows, based on the yearly average;

Clinical and Research Anesthesiologists [1]	7.0
Nurse Anesthetists	3.0
Inhalation Therapy Technicians [2]	5.0
Anesthesia Technicians	2.0
Secretarial Personnel [3]	2.0

1. Two anesthesiologists engaged in part time research
2. Included one trainee position
3. One secretary employed part time (3 days per week)

ANESTHESIOLOGICAL PROCEDURES PERFORMED

Anesthesia and related supportive treatment were provided for patients in 1150 instances. Surgical operations accounted for 964 and diagnostic procedures for 186. Miscellaneous services, consisting of nerve blocks, consultations, and resuscitation treatments totaled 82. Surgical and diagnostic procedures were, for the most part, extensive and prolonged. Many of the patients were seriously ill with life-threatening conditions, and their health and continued survival were dependent on the success of the surgery. Anesthesia time exceeded 3 hours in 495 instances (43 percent), 5 hours in 263 procedures (23 percent) and 6 hours in 188 operations (16 percent).

Surgical procedures classified according to type of surgery and the use of special adjunctive techniques were as follows:

1.	Thoracic (cardiac, pulmonary, great vessels, superficial chest)	
	a. with extracorporeal circulation technique	183
	b. closed technique	78
2.	Neurological	
	a. craniotomy	74
	b. sterotaxic procedures, including thalamotomies	8
	c. spinal cord operations	19

Total body hypothermia was not utilized during the year.

3.	General surgical (abdominal, pelvic and inguinal)	187
4.	Kidney operations, including bladder and adrenal gland.	14
5.	Perineal (gyn-71, genito-urinary-44, others-6)	121
6.	Face, head, and neck	116
7.	Eye, ear, nose, and throat	31
8.	Dental	12
9.	Orthopedic	33
10.	Miscellaneous procedures	88
	Total	964

Procedures performed by the surgical branches of NCI, NHLI, and NINDS were characterized as follows:

1. NCI - extensive excision procedures for treatment of cancer, particularly of the head, neck, and pelvic regions.

2. NHLI - operations on the heart and great vessels to correct congenital and acquired defects; 183 of these procedures were done with the aid of extracorporeal circulation technique. An additional 26 cardiac and great vessel procedures were done by closed methods.

3. NINDS - neurosurgical procedures to localize and remove the epileptogenic foci and neoplastic tumors, sterotaxic techniques for treatment of abnormal movement and tonus syndromes; surgery for vascular malformations of spinal cord were included.

The complexity and duration of more than half of the surgical procedures required that more than one anesthetist be present during critical phases of the operations. The composite anesthetic procedure including the manipulation of anesthetic equipment, physiological monitoring apparatus, thermal devices, blood transfusion, etc., made it advisable to have a second professional anesthetist, physician, or nurse present when indicated.

Diagnostic studies done with the aid of general anesthesia totaled 186. Fifty-eight of these studies consisted of cardiac catheterization procedures on small children. Heavy or "controlled sedation" rather than full general anesthesia was utilized in the management of these children.

Patients with incapacitating illnesses capable of causing serious circulatory and respiratory derangements underwent diagnostic studies under the care of anesthesiologists who maintained surveillance for vital signs and gave supportive treatment as needed.

Diagnostic tests done under general anesthesia included:

Pneumoencephalograms	13
Cerebral arteriography	8
Special eye examinations	4
Cardiac catheterization procedures	58
Cystoscopy	16
Miscellaneous, including cardioversions	84
Renal function studies	3
Total	186

The Institutes responsible for the admission of surgical patients who received anesthesia are listed below. The first six Institutes have surgical services.

Institute	Procedures	Percent
NCI	405	35%
NHLI	386	34%
NINDS	170	15%
NIDR	3	0.3%
NEI	20	2%
NICHD	47	4%
NIAMD	62	5%
NIAID	26	2%
NIMH	31	3%

Surgical and diagnostic procedures on the above patients were carried out by the six surgical services as follows:

Institute	Procedures	Percent
NCI	494	43%
NHLI	379	33%
NINDS	193	10%
NIDR	10	0.9%
NEI	25	2%
NICHD	49	4%

INHALATION THERAPY ACTIVITIES

The Inhalation Therapy Section, Anesthesiology Department, CC, is staffed with five inhalation therapy technicians, including one trainee. This small staff was responsible for overseeing all inhalation therapy in the Clinical Center during FY 1972. The procurement and maintenance of adequate supplies of inhalation therapy equipment and its cleansing, processing, repair, and sterilization occupied a large proportion of personnel time. Other duties consisted of making daily rounds of patients receiving respiratory care, answering requests by attending physicians for initiation of new treatments, and trouble-shooting of equipment in use.

Staff anesthesiologists served as medical consultants for the inhalation therapy technicians and for attending physicians who requested such service.

The types of respiratory care carried out by inhalation therapists have been roughly classified in the categories listed below with the numbers of hours or treatments given for each.

Oxygen therapy (tent, mask, catheter)	21,933 hours
Humid atmosphere therapy	33,108 hours
Aerosol therapy	5,317 hours
Intermittent positive pressure breathing with aerosols	46,656 treatments

Long-term respiratory assistance .....23,890 hours
Short-term resuscitation and assisted respiration.... 2,238 hours

Educational Activities

Three types of regularly scheduled training programs for the instruction of Clinical Center personnel were held during the year as follows:

1. Cardiopulmonary resuscitation. Staff anesthesiologists conducted monthly teaching and demonstration sessions of advanced techniques for cardiopulmonary resuscitation. Each participant was given an opportunity to demonstrate cardiopulmonary resuscitation techniques on a manikin. Seventy-six professional nurses, newly employed by the Nursing Department, received this instruction.

2. Orientation of new employees. The Chief Inhalation Therapist conducted monthly orientation and demonstration sessions in the use of inhalation therapy equipment for 96 recently employed Clinical Center nursing personnel.

3. Positive pressure therapy. The Chief Inhalation Therapist also held monthly teaching and demonstration sessions on the use of positive pressure respirators for professional nurses on patient care units where such therapy is commonly employed; 129 nursing personnel received this training.

4. EEO trainee. A trainee position was set up for Inhalation Therapy eighteen months ago. During the past twelve months the employee continued to receive technical training in the handling of respiratory equipment and was introduced to patient care duties. For the past nine months this employee has been enrolled in the Upward Mobility College with 25% of her working hours allotted to this activity.

Inhalation Therapy Coverage

Three fully qualified technicians, one new employee with some inhalation therapy background, and one trainee made up the entire staff. A staff anesthesiologist was assigned as a consultant each month. With this limited staff, regularly scheduled coverage was provided during two shifts on working days and one shift on weekends and holidays. At other times telephone coverage was maintained by the three senior technicians who responded to call for emergency assistance by returning to the Clinical Center from their homes at distances varying from 10 to 45 miles. Personal inconvenience and expense of travel outside regular working hours were incurred in this extra duty which could not be fully compensated by overtime pay. An average of 5 calls per month for a total of 40 for the year was recorded.

RESEARCH ACTIVITIES

Clinical associates in anesthesiology are deferred during three years of residency before they report to NIH. The third year of this training is usually devoted to research.

Dr. Bruce Cullen, Staff Anesthesiologist, as principal investigator carried out three related investigations in collaboration with Dr. Paul Chretien and Mrs. Roxane Hume, Surgery Branch, NCI. Tissue culture laboratory facilities were provided by NCI and the gas analysis equipment was furnished by our department. A part time technical assistant was employed to help on two of these projects during six months of the year. Three project reports covering this work are attached.

Dr. Jordan Miller, Staff Anesthesiologist, collaborated with Dr. Harry R. Keiser, Experimental Therapeutics Branch, NHLI, in a study for the evaluation of patients exposed to halothane, fluroxene, and methoxyflurane while undergoing surgery. A previous study was extended to include in vitro studies of rabbit liver. This study is particularly concerned with the release of protocollagen proline hydroxylase after exposure to anesthesia utilizing the halogenated hydrocarbons. Laboratory facilities were provided by NHLI. A full project report is being submitted by that Institute.

MAJOR PROBLEMS ENCOUNTERED

The only major problem encountered during the year was a staff shortage. The activities of our staff fall in two categories, anesthesiology services, and inhalation therapy services. There was a shortage of anesthetists on one or two days each week when the surgical schedule peaked as a result of the independent surgical programs conducted by the several Institutes. However, a similar shortage of surgical nursing personnel necessitated more even scheduling so that we were able to provide anesthesia services without too much difficulty. Our staff of two permanent anesthesiologists, five clinical associates and three nurse anesthetists had to be distributed among the widely separated sites in which we worked. Two anesthetists were required for the longer more complex procedures making the present staffing barely adequate even when there were no absences. A decided improvement in technical support was achieved with the reassignment of two anesthesia technicians back to our department from the Surgical Nursing Service during the latter part of the year.

The most critical staff shortage encountered during the year, as in previous years, was concerned with inhalation therapy services. During the past year we limped along with only three fully qualified technicians plus a probationary employee with limited experience and an EEO trainee. We continued to maintain high standards in the processing of non-disposable equipment although this operation required that the Inhalation Therapy Section maintain its own sterile supplies. Increased use was made of disposable equipment, particularly that used on ventilators where a fresh breathing circuit was provided daily. The outstanding deficiency in providing Clinical Center patients respiratory care is in the lack of technicians to maintain adequate surveillance of all patients undergoing continuous respiratory therapy. The postoperative intensive care unit on 6-West where cardiac patients are treated could have utilized the full time services of inhalation therapists twenty-four hours a day, at least four days per week when surgery was scheduled. Patients on 5-East with

neuromuscular disease who received long-term respiratory assistance also fell in this category and there was a number of other areas where similar treatments were carried out. Minimal coverage from the standpoint of patient safety and therapeutic benefit was provided with our skeleton staff of three qualified technicians who were able to serve on independent shifts for fourteen hours on regular working days, eight hours on weekends and holidays, and provide emergency call coverage from their homes at other times. Because of the personnel shortage it was necessary to cover most weekends and holidays with overtime assignments. It is urgently recommended that steps be taken immediately to remedy this serious deficiency which has been alluded to many times in our reports.

CHANGES AND IMPROVEMENTS

There is very little to be reported in the way of changes or improvements. The administrative decision to reallocate anesthesia technicians to our department rather than have this service provided on a haphazard basis by Surgical Nursing personnel, resulted in a marked improvement in service and safety maintenance of anesthetic equipment. This was the one bright spot in the bleak overall personnel situation. It served to vastly improve the working relationships between our group and the Surgical Nursing Service.

FUTURE OBJECTIVES

Our future objectives will be concerned with the provision of adequate professional anesthesiologists for future staffing. With a yearly turnover of clinical associates we must constantly plan ahead for replacements. At the time of this writing clinical graduates who plan to embark on a career in anesthesiology continue to be attracted to the CORD Program of the PHS. Providing all those selected adhere to their commitments we have an insured supply of anesthesiologists up to 1978. It has been mentioned in past reports that a combination of a more attractive compensation with increased opportunity for research would serve to attract newly trained anesthesiologists to remain at the Clinical Center in the future.

Another objective is to improve and increase our inhalation therapy service as soon as the personnel freeze is lifted.

PUBLICATIONS

Cullen, B. F., Sample, W. F., and Chretein, P. B.: The effect of halothane on phytohemagglutinin-induced transformation of human lymphocytes in vitro. Anesthesiology 36: 206-212, 1972.

Smith, A. L., Mull, T. D., and Wollman, H.: Anesthesia and the brain. In Fabian, L. W. (Ed.): Clinical Anesthesia. Philadelphia, Pa., F. A. Davis Company, 1969, pp. 91-107.

Stoelting, R. K.: The effect of nitrous oxide on halothane output from fluotec mark 2 vaporizers. Anesthesiology 35: 215-223, 1971.

Stoelting, R. K., and Longnecker, D.E.: The effect of right-to-left shunt on the rate of increase of arterial anesthetic concentration. Anesthesiology 36: 352-356, 1972.

Stoelting, R. K., and Longshore, R. E.: The effects of temperature on fluroxene, halothane, and methoxyflurane blood-gas and cerebrospinal fluid-gas partition coefficients. Anesthesiology 36: 503-505, 1972.

Serial No. CC-61
1. Anesthesiology Dept., CC
2. Anesthesia Research Lab.
3. Bethesda, Maryland

PHS-NIH

Individual Project Report
July 1, 1971 through June 30, 1972

Project Title: The Effect of Halothane on in Vitro phytohemagglutinin-induced Human Lymphocyte Transformation.

Principal Investigator: Bruce F. Cullen, M.D.

Other Investigators: Paul B. Chretien, M.D.

Cooperating Units: Surgery Branch, NCI

Man Years:
- Total: 0.4
- Professional: 0.2
- Technical: 0.2

Project Description:

Objective: To determine the effects of halothane in vitro on transformation of human lymphocytes.

Methods: Lymphocytes were purified from whole blood supplied by normal paid volunteers. Lymphocytes were cultured, stimulated to transform with phytohemagglutinin, and incubated in the presence of halothane vapor. Transformation was quantitated in terms of the incorporation of tritiated thymidine. Controls were incubated in an environment similar to that of the experimental group, except that halothane was absent. Halothane concentrations were in the range used clinically and were measured by infra-red techniques.

Major Findings: Halothane had a progressive, dose-dependent, inhibitory effect on PHA-induced lymphocyte transformation. There was minimal inhibition at 0.5% halothane, 17% inhibition at 1.0% halothane and 45% inhibition at 2.0% halothane. Inhibition was apparent at all times during the incubation period and was progressive with time. Inhibition of tritiated thymidine uptake indicated that halothane also inhibits DNA synthesis.

Significance to Biomedical Research and Clinical Practice:	The data indicate that halothane can inhibit a major phase of the immune response. Anesthetized patients may be more susceptible to infection or to the operative spread of malignancy. The data also provide additional information regarding the cellular effects of anesthetics.
Proposed Course:	The major portion of the study was completed in October 1971. Additional studies are now being conducted to examine the effects of halothane on specific phases of the transformation phenomenon.
Publication:	The paper was published in Anesthesiology 36: 206-212, 1972

Serial No. CC-61

1. Anesthesiology Dept., CC
2. Anesthesia Research Lab.
3. Bethesda, Maryland

PHS-NIH

Individual Project Report
July 1, 1971 through June 30, 1972

Project Title: The Effect of Anesthesia on Phagocytosis and the Reduction of Nitroblud Tetrazolium by Human Leukocytes

Principal Investigator: Bruce F. Cullen, M.D.

Other Investigators: Roxane B. Hume, B.S.
Paul Chretien, M.D.

Cooperating Units: Surgery Branch, NCI

Man Years:

Total:	0.2
Professional:	0.1
Technical:	0.1

Project Description:

Objective: To determine the effects of anesthesia on both the engulfment phase and metabolic aspects of phagocytosis by human leukocytes.

Methods: Eighteen patients were anesthetized with either halothane/nitrous oxide, or Innovar/Thiopental/nitrous oxide. Blood was drawn before anesthesia and again during anesthesia, but before surgical incision. Leukocytes were purified from whole blood and incubated in the presence of 0.2% NBT or 0.2% NBT and 0.81 micron latex particles. After incubation the cells were smeared on a slide, stained, and examined by light microscopy. The number of latex and NBT-containing monocytes and polymorphonuclear leukocytes was determined.

Major Findings: Anesthesia produced a significant reduction in the number of leukocytes engulfing latex and reducing NBT. Thus, anesthesia interferes with both the engulfment and metabolic phases of phagocytosis.

Significance to Biomedical Research and Clinical Practice:	Phagocytosis is the first line of defense in the immune response. Our results indicate that anesthesia inhibits phagocytosis and renders patients more susceptible to infection and intraoperative spread of malignancy. The data also indicate that anesthesia blocks the normal metabolic pathways involved in the phagocytic process.
Proposed Course:	Additional studies will be undertaken in vitro to more clearly identify the mechanism by which anesthesia interferes with phagocytosis. This has been accepted for presentation on a scientific program of ASA in October 1972.

Serial No. CC-61
1. Anesthesiology Dept., CC
2. Anesthesia Research Lab.
3. Bethesda, Maryland

PHS-NIH

Individual Project Report
July 1, 1971 through June 30, 1972

Project Title: The Effect of Lidocaine on in Vitro Phytohemagglutinin-Induced Human Lymphocyte Transformation

Principal Investigator: Bruce F. Cullen, M.D.

Other Investigators: Brigid G. Leventhal, M.D.
Paul B. Chretien, M.D.

Cooperating Units: Medicine Branch, NCI
Surgery Branch, NCI

Man Years:

Total:	0.4
Professional:	0.2
Technical:	0.2

Project Description:

Objective: To determine the effects of lidocaine on PHA-induced human lymphocyte transformation and DNA synthesis.

Methods: Lymphocytes were extracted from whole blood provided by normal paid volunteers. The lymphocytes were purified, cultured, stimulated with phytohemagglutinin, and incubated in the presence of various concentrations of lidocaine hydrochloride. Concentrations of lidocaine ranged from 1 to 1000 ug/ml. Transformation was quantitated in terms of the incorporation of tritiated thymidine. To confirm metabolic studies, lymphocytes were also examined microscopically to determine the extent of transformation in the presence of lidocaine.

Major Findings:	Lidocaine had no inhibitory effect on lymphocyte transformation at the usual concentrations observed clinically during regional anesthesia. Inhibition was apparent only at the 50, 100, and 1000 ug/ml concentrations. Morphologic studies confirmed finding obtained with the incorporation of radioactive label.
Significance to Biomedical Research and Clinical Practice:	If our findings obtained during in vitro studies also apply to patients in the clinical setting, it is apparent that lidocaine has minimal effect on this phase of the immune response when present in concentrations (serum) of 10 ug. ml. or less.
Proposed Course:	The study was completed in April 1972.
Publication:	Manuscript is to be submitted for publication in the British Journal of Anaesthesia.

July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY OF ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

BLOOD BANK DEPARTMENT

CC-24
Serial No.

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PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY OF ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

BLOOD BANK DEPARTMENT

CC-24
Serial No.

SUMMARY OF SERVICE RESPONSIBILITIES

This year has seen the most active period in the history of transfusion services at the Clinical Center. Not only were more transfusions given in FY year (24,250) than our previous top year of 1968 (23,991), but this year there was no preprocessed commercial blood handled as there had been in 1968. We therefore had a much larger donor recruitment and collection program among the NIH employees this year, as well as a new comparative test program for the Hepatitis Associated Antigen. Whereas in 1968 we had 24 full-time employees, in 1972 we had 23, of whom three were committed to those new programs, leaving only 20 to do what was a managable workload for 24 in 1968.

Close attention was paid to the multiple use concept (component therapy) with the 5,500 units of whole blood which we collected at the Clinical Center. They were processed as follows:

whole blood	1,000
packed cells	2,000
platelet poor-whole blood	2,500

Because of the highly planned donor schedule, there was almost total usage of these products, i.e. only 260 units (4.7%) outdated. To a large part, that outdating, which is calculated on a 21 day shelf life, represents special case outdating, i.e. restrictions of a five day shelf life for platelet-poor whole blood used in cardiac surgery; a 12 day shelf life for blood used in massive transfusion for cancer surgery; a four hour shelf life for blood which has been passed through nylon filters to remove white cells.

This finely tailored service was highly efficient in the use of blood but required much personnel planning and handling time.

The other supplies of transfusion materials for the hospital were obtained as follows:

Whole blood from Red Cross (of which 1000 units were returned in date)	3,500
Platelet concentrates from Red Cross	4,000
Platelet rich plasma, commercial (which was processed by us into platelet concentrates as well as 7,000 units of antihemophilic cryoprecipitate)	10,500

We distributed some 500 units of blood through the American Association of Blood Banks Clearinghouse to other hospitals and in addition made local shipments of 200 units of whole blood, 150 units of platelets, and 1000 units of cryoprecipitate. It is obvious that this blood bank serves as a real community resource. These 2,000 units of blood products served as a large adjunct to the blood supply in this region.

DONOR PROGRAM

The program begun in 1970 to increase the number of NIH employees by a combination of computerized files, a cash incentive and a donor program manager has been most successful. We have peaked at slightly over twice the number of donations that we were seeing before 1970.

The increased utilization of NIH employees as a donor source resulted in the collection of 3,643 pints of blood during the first eight months of fiscal year 1972. The projected figure for the total amount of blood to be collected in the Clinical Center Blood Bank as of 30 June 1972, is 5,500 pints.

The total number of active donors recorded in our files is 2072. This figure represents almost 20% of the NIH employee population in the Bethesda area.

In addition to an extensive red cell type on some 2000 donors we have approximately 1200 of them typed for their HLA (white cell) factors. This information is stored in the NIH computer systems and was used for finding compatible platelet donors for NCI patients in experimental programs.

Further expansion of the donor program was delayed by the fact that we reached capacity of efficient scheduling for the number of nurses available to bleed donors. Over 4,000 donors of blood for use as a laboratory reagent were contacted and bled. This load is approaching the collection of blood from donors for transfusion purposes. In the latter part of the year, the loss of our donor program manager to another position at NIH was a serious blow to the program.

WORKLOAD

At one time, a workload reporting system was used which was patterned after that of the Clinical Pathology Department and was read in work units/technologist/day. That work unit did not include the work of our nursing staff in the collection of blood from donors and it became necessary to construct another factor. We have found it useful to report a factor based on the annual number of transfusions and the number of collections of blood for transfusion, as a function of the number of full time employees. We therefore take into account the effort of several types of employees, all of whom provide a service function in relation to meeting transfusion needs. Many special services such as bleeding donors to collect blood as a laboratory reagent, special serological services and clinical consultation are not included.

A comparison is made for the last six years:

	Number of Transfusions			Donors
	Whole blood & red cells	Coagulation components	Total	
1967	6900	13400	20,300	2200
1968	6300	16800	23,100	2700
1969	6700	14900	21,600	2300
1970	7400	10200	17,600	3600
1971	7900	14700	22,600	5300
1972	6800	17400	24,200	5500

From these figures related to the number of employees the workload factor is constructed:

	Transfusions + Donors	Employees	Workload
1967	22,500	24	.94
1968	25,800	24	1.07
1969	23,900	21	1.14
1970	21,200	20	1.06
1971	27,900	23	1.21
1972	29,700	23	1.29

The optimum workload factor is considered to be 1.00.

It is obvious from these figures that this Department is understaffed. We have been able to meet service obligations only by reducing our teaching and service activities and asking our employees to work a large amount of overtime.

TEACHING

A major continuing effort of this Department is its teaching function.

Largely as a result of a demonstration in this Department that it is possible to teach an advanced integrated medical postgraduate program in blood banking, the American Board of Pathology was designated by the Council on Medical Education, American Medical Association, to examine diplomates (of any American Board) for the subspecialty of blood banking. The first examination will be given in 1973.

An article in the N.Y. Times for April 13, 1972 called attention to the fact that there are only four training programs for blood bank directors in the entire country. The article listed the Clinical Center as one of the only two based in a hospital with patient care responsibility. It is the only program which has trained any number of clinical pathologists in this specialty (89% of the medical directors of blood banks in this country are pathologists, 6% internists, 2% pediatricians). The following programs are directed by alumni of our program: Massachusetts Regional, Milwaukee Regional, Kentucky Regional, Johns Hopkins, NYU, and Boston Childrens. These alumni represent the current new directions in blood banking in this country.

The other major teaching effort, the training of technologists as Blood Bank Specialists for joint certification by the American Society of Clinical Pathologists and the American Association of Blood Banks, has had to be reduced because of the service workload. Our 18 month program was at one time the largest in the country, with the capacity for five students. Although we were granted approval this year for another three years, we have had to cut back so that at the end of the fiscal year we had no students in training in this nationally critical specialty.

Mr. Robert Herz who completed that training program last year and who is now certified as a Technologist Specialist in Blood Banking was assigned for six months to joint supervision with Dr. John Rourke, Chief, Office of Clinical and Management Systems, CC. The purpose of the assignment was to free Mr. Herz from service responsibilities so that he could take coordinated training in computer resources and systems analysis.

A pilot three day workshop in testing for the Hepatitis Associated Antigen was given by Drs. Schmidt, Alter and Holland and Mrs. Holly Smith under the auspices of the American Society of Clinical Pathologists under a grant from

BHME. That workshop has been duplicated at 20 other centers throughout the country in the past year.

Formal teaching was given to practicing pathologists in component therapy in a three day program at NIH, a one day program in Boston, and to hematologists in a one day program in San Francisco. In addition, the annual course in Immunohematology and Blood Transfusion in the Foundation for Advance Education in the Sciences was conducted in the Spring term by Dr. Paul Holland and Mrs. Mary McGinniss.

Other teaching efforts have been: one, the introduction of formal blood bank rounds held weekly for the blood bank physicians and research staff and for clinical pathology residents; and two, continuation of the twice weekly, informal teaching sessions which provide ongoing education for the entire blood bank staff.

DEVELOPMENTAL RESEARCH

HEPATITIS

Clinical Hepatitis

The major research effort in the blood bank was again directed toward hepatitis and the Hepatitis Associated Antigen (HAA). In this year we completed another phase of the continuing research led by Dr. Paul Schmidt on posttransfusion hepatitis. That study is now in its tenth year. The first phase demonstrated the true incidence of the hepatitis hazard in this country. In the next phase, the inefficacy of the use of routine gamma globulin prophylaxis was shown. A study by Dr. John Walsh while he was a member of this Department, established the danger of the commercial donor and then Dr. Holland proved the major hepatitis risk of blood containing HAA. In this year, Dr. Harvey Alter assessed the effectiveness of combined exclusion of both commercial and HAA positive donors. This study has proved that the combined exclusion has resulted in the projected marked reduction in posttransfusion hepatitis. In multiply transfused open heart surgery patients, the hepatitis frequency has been reduced from 33% to 7%.

Perhaps even more interesting was the evaluation of why there was residual posttransfusion hepatitis after excluding these two major risk factors. The results of this 1972 study were very conclusive in this regard. It demonstrated clearly that although some of our posttransfusion hepatitis is related to a virus unassociated with HAA, presumably hepatitis virus A, a portion remains HAA positive despite the fact that all donors

had been previously screened by the currently available tests and found to be HAA negative. It is thus apparent that our tests are still too insensitive to detect every donor capable of transmitting HAA positive hepatitis. It would appear then that further reductions in posttransfusion hepatitis will require the discovery of not only a marker for hepatitis virus A (currently unavailable) but also a practical and more sensitive test for demonstrating hepatitis virus B.

In a combined study with Dr. Paul Plotz, NIAMD, we demonstrated the appearance of anti-DNA antibodies and the lupus phenomenon in a patient with acute hepatitis. Although this patient was thought to have collagen vascular disease prior to the onset of hepatitis, the serologic phenomenon did not appear until she developed hepatitis. It then disappeared as her hepatitis resolved. A more extensive study to see if anti-DNA antibodies are a common phenomenon during the development of acute hepatitis is being undertaken in conjunction with Dr. Plotz and Dr. Alfred Steinberg of NIAMD.

Because of the many reports of hepatitis epidemics among dialysis centers throughout the world, we established a surveillance program for HAA with the Washington Metropolitan Renal Dialysis Center. Both patients and staff are being monitored bimonthly for HAA, anti-HAA and tests of liver function. Thus far, transmission from one chronic carrier to one staff member has been demonstrated, but there has been no additional spread. We continued to collect sera from hemophiliac patients at Suburban Hospital who are undergoing maintenance therapy with cryoprecipitate. We are attempting to assess patterns of antigen and antibody occurrence in this highly sensitized population.

Hepatitis Tests

A major blood bank effort has been to evaluate the use in practice of the most sensitive tests for HAA. One current effort is directed at radioimmunoassay. We have worked previously with Dr. Robert Purcell of NIAID in developing a radioimmune precipitation test. That test, while excellent for detection of antibody to HAA, is less effective as a screening measure for the antigen itself. In the past year, we have attempted a direct radioimmunoassay, utilizing a purified radio-labelled antibody to HAA. In order to do this, Mr. Allen Lewis and Dr. Alter have been trying to first isolate antibody to HAA by affinity chromotography. This has been only partially successful to date and is currently under active investigation.

We also conducted extensive studies on a commercially prepared radioimmunoassay system for HAA developed by Abbott Laboratories. That assay utilizes polystyrene tubes coated with anti-HAA. The principle of the test is to sandwich HAA between the cold antibody attached to the tube and a radio-labelled antibody which is subsequently added. On the basis of comparative titers and test panels, it was shown that this test is considerably more sensitive than the standard counterelectrophoresis technique. However, the increased sensitivity was not reflected in the finding of any large number of additional HAA positive blood donors. Indeed, we found evidence that reports suggesting that this test would detect three to ten times as many HAA positive donors may have been based upon the detection of false positives.

Dr. Holland performed studies with a hemagglutination inhibition test which, despite previous reports to the contrary, he found has no advantage over the standard counterelectrophoresis technique for the detection of HAA. Hemagglutination, like radioimmunoassay is a sensitive test for antibody to HAA and is being performed routinely for this purpose, especially for our seroepidemiologic studies. Dr. Holland evaluated a latex particle agglutination test for HAA developed by Abbott Laboratories.

Lastly in terms of testing, the Department served as a reference laboratory for testing panels distributed by the American Association of Blood Banks and by the Division of Biologics Standards.

Hepatitis Antigen Typing

A study was made of the HAA subtypes. We showed the epidemiologic significance of HAA subtyping and also described a new method for rapid subtyping using the counterelectrophoresis technique. It is anticipated that this will become the standard subtyping technique throughout the country.

Blood Products

Dr. Holland was also the principal investigator in a study of the distribution of HAA in cold ethanol fractions of plasma drawn into various anticoagulants. It was shown that HAA was distributed in all plasma fractions except fraction II (gamma globulin), and that fraction V (albumin) contained HAA despite its known safety in clinical usage. It thus appears that HAA may lose infectivity while maintaining antigenicity. The study also showed that the radioimmunoassay techniques result in false positive tests for HAA when testing Cohn fraction II

(gamma globulin) preparations. This study was begun in this Department and done in cooperation with Dr. James Sgouris of the Michigan Department of Health. It was the key piece of work in moving the Division of Biologics Standards to license blood derivates from blood collected into a new anticoagulant, CPD. This now makes it practical to collect blood for transfusion into CPD, a first step in increasing the dating period of blood.

Hepatitis Animal Model

In collaboration with Dr. Purcell of NIAID, the Blood Bank participated in studies which demonstrated the serial passage and replication of HAA in Rhesus monkeys. This study has very important implications in terms of an animal model system for HAA. One of the big deterrents to research in this area has been the lack of such an animal model.

Hepatitis Immunity

The Blood Bank has been interested in the asyptomatic carrier of HAA, and Dr. Alter in conjunction with Dr. Thomas Chalmers published a paper discussing the management of such carriers particularly from a public health standpoint. We also participated in a study, now nearing completion, in which health care personnel in the Clinical Center were compared with persons who had never had patient contact, for the presence of HAA, anti-HAA and hepatic enzyme abnormalities. Preliminary evidence indicated that health care personnel were not as greatly at risk as previously anticipated and that non-health care personnel who had the antigen were most probably infected by previous transfusions. The patients of three chronic carriers of HAA whose jobs involved patient care are currently being followed to assess the risk from HAA positive health care personnel to their contacts. Thus far none of the patients have developed hepatitis or HAA. As an adjunct to this study, the recipients of food from an HAA positive food handler and appropriate controls were followed for a period of six months in conjunction with Dr. Plotz, of NIAMD. None of the recipients of food from this HAA positive food handler developed hepatitis, HAA or immune responses to HAA. Such studies are of continued importance because the literature is totally lacking in data on the risk which HAA carriers represent to their professional contacts.

Dr. Holland and Dr. Alter collaborated with Dr. Purcell of NIAID in a published report further defining the nature of the immune response to HAA. The work dealt primarily with the frequency and pattern of response of anti-HAA as detected by the radioimmune precipitation technique.

The Blood Bank completed a study on the occurrence of anti-ruminant antibodies in a normal donor population. Our report stressed the fact that such antibodies could result in false positive tests for HAA. After publication of our paper, a new hepatitis antigen described by the New York Blood Center was found to represent a false positive test due to anti-ruminant antibodies.

Dr. Geoffrey Sherwood continued his work on cellular immunity to HAA and has been able to demonstrate lymphocyte transformation in a small number of patients recovering from HAA positive hepatitis. He also worked with Dr. Michael Blaese of NIAID to develop a more sensitive test for delayed hypersensitivity based on the elution of radioactive chromium from red cells coated with HAA. This procedure is still in its early development and its usefulness unproved.

Hepatitis Advisory

In addition to their direct research efforts, Blood Bank personnel served extensively in an advisory and teaching capacity related to hepatitis. Dr. Schmidt and Dr. Alter served as invited participants to a Symposium on Australia antigen conducted by the American Society of Microbiology in Philadelphia, Pennsylvania.

Dr. Alter and Dr. Holland served as invited discussants in a Symposium on Viral Hepatitis and Blood Transfusion conducted by the University of California at San Francisco. Dr. Alter and Dr. Holland continued to serve as advisors to the NHLI Blood Resources Program and have served in an advisory capacity in the hepatitis program of NIAID. Dr. Schmidt has been a member of the NIH Task Force on Hepatitis. Dr. Holland was an advisor to the Veterans Administration Project on Gamma Globulin Prophylaxis of Posttransfusion Hepatitis. Dr. Alter and Dr. Holland have lectured on their hepatitis research at Georgetown University, George Washington University, Washington Hospital Center, D. C. General, and Arlington Hospitals.

IMMUNOHEMATOLOGY

Major effort in service-oriented research has been applied in three areas: 1) providing consultation, special transfusion service, and long-term follow-up for bone marrow transplant patients; 2) studying the effect of penicillin antibody found in donor blood, on patients receiving penicillin therapy; and 3) providing consultation service for problems such as unidentifiable antibodies to transfusion constituents, hemolytic disease of the newborn, autohemolytic anemias and drug-related transfusion problems.

One of our staff, Mrs. Mary McGinniss, is a permanent member of the bone marrow transplant team and attends the weekly NCI meeting in order to advise on, and implement, any special blood bank services and tests needed to prepare a patient for bone-marrow transplant, and to follow the progress of the patients posttransplant. Some of these special services and tests are: complete red-cell phenotyping of all family members; red cell and penicillin antibody testing of recipient and donor(s); testing of ALS (anti-lymphocyte serum), used in immunosuppression; monitoring specific blood group substance used to neutralize iso-antibody when the transplant crosses blood group barriers; and, following neutralization of such antibody, selecting red-cell markers to follow post-transplant; doing quantitative analysis of proliferation of donor-red-cell marker in recipients; and, selection of blood for transfusion which will not interfere with red-cell markers.

The effects of cephalothin therapy on red cells and subsequent clinical effects were noted first a few years ago in this Department and several papers have been published concerning this important clinical phenomenon. Following this interest in drug-related blood bank problems, Mrs. McGinniss turned her attention to penicillin-related transfusion effects. Ten percent of normal donors have hemagglutinating penicillin antibody, and patients on penicillin therapy have suffered severe hypersensitivity-type reactions to transfusion of blood containing such antibody. This finding by Mrs. McGinniss and Dr. Dennis Goldfinger attracted much advance attention and excerpts from their report have been printed in Medical World News, Clinical Laboratory Forum and other like media including a South American Journal, "El Medico." A paper from this Department and the NCI will soon be published about these findings and their implications.

Our antibody consultation service headed by Mrs. McGinniss, handled over 50 referrals of transfusion problems from other hospitals this year. Beside providing actual and needed patient information, these referrals were used for teaching purposes. They form a continuing base for practical teaching and for the beginning of significant clinical research.

Another drug-related problem was that of methadone. A New York group reported at a national meeting that drug users taking methadone therapy almost all developed a positive antiglobulin test, a sign of a serious drug side effect. Because of the potential effect of this finding on national addict treatment programs, we began an immediate study of this phenomenon in cooperation with the D.C. Department of Human Resources. Fortunately for the heroin addicts under treatment, Dr. Sherwood was not able to confirm the original New York finding.

PROFESSIONAL ACTIVITIES

Many of the members of the Blood Bank Department staff performed significant activities in the local, national and international scientific community. Among the major efforts were the following:

Dr. Schmidt served as the Chairman of the Committee on Scientific Program organizing the Transfusion Congress, a joint effort of the American Association of Blood Banks - International Society of Blood Transfusion. The meeting will be held in Washington in August of 1972. Some 3,000 registrants are expected to share their information among the international transfusion community.

Dr. Schmidt also served on the Task Force on a National Blood Policy for the office of the Assistant Secretary for Health and Scientific Affairs, DHEW. This was a full time, three month assignment to gather the information and to plan the recommendations requested from DHEW by the President for an efficient nationwide blood collection and distribution system.

Dr. Alter and Dr. Holland spent two to three weeks in reviewing and advising on contracts for the National Blood Resources Program, NHLI, as well as in work for the National Academy of Science - National Research Council.

Mrs. McGinniss prepared an audio-tape on "Special Problems in Blood Banking" for the National Committee for Careers in the Medical Laboratory. This self-study tape was produced under contract with the U.S. Department of Labor, and will be available to all independent and hospital laboratories by September 1972.

Dr. Geoffrey Sherwood completed his two year assignment to this Department on June 29, 1972. He will be going to Boston where he will be a resident in medicine at the Massachusetts General Hospital. Dr. Sherwood will be replaced by Dr. Walter B. Lundberg who will be arriving early in July of 1972 from Columbia Presbyterian Medical Center, New York.

Dr. Robert Moncrieff, who joined the staff in 1971, took his examination for certification in Clinical Pathology by the American Board of Pathology on May 17 and 18. His prior training had been at Loma Linda University Medical Center.

Mrs. Jessie Levan, a well trained blood bank technologist joined the staff on November 7, 1971. Mrs. Levan recently passed the written portion of the American Association of Blood Banks examination.

Mr. Rodney Douglass gave up his position as donor program manager on May 12 to accept a position in the Office of Personnel Management, ODA.

FUTURE COURSE

This Department is at a crossroads. We hope to continue our real contributions to blood bank practice and to clinical research as well as to provide continuing research quality patient care services. Personnel ceilings may force us to reduce our aims. One major effort, teaching, has already been curtailed, as perhaps least important to the NIH mission. The decision as to future course to be taken will be based on the support available.

Among the high priority research in immediate prospect are plans for implementing improvements in the tests for the Hepatitis Associated Antigen (HAA), one of the most important areas in modern blood banking.

We are currently evaluating the frequent false positive HAA tests which plaque the radioimmunoassay method and trying to adapt the method so that it will indeed find the hidden HAA positive blood donors. We are also working with the NIAID to adapt the test to a microtiter system which would make it faster and much more economical.

In order to prove any clinical refinement of such tests, as well as the true validity of the transaminase tests on donors, the surveillance programs done in cooperation with NHLI and cardiac surgery patients should be reimplemented. One sure approach to the final solution of the hepatitis problem should be the evolution of an animal model. Our work with NIAID which looks so promising with the Rhesus monkey should be increased.

We are in a position to move the use of platelet therapy for patients undergoing massive chemotherapy from research practice into routine practice. NCI scientists have repeatedly expressed a wish to move their platelet transfusion and white cell typing programs into this Department. This would make possible an economical and practical use of the advanced knowledge of platelet and white cell therapy which already exists. We could make this transition if we are given the resources to accept the charge.

The use of computer support for the donor program is a proved and practical thing. We are now ready with internal talent to give clinical trial to other computer support of our many transfusion activities.

This section on FUTURE COURSE is different from that of past years. Previously we have stated what will be done. This year we can only state what can and should be done. The limitations on number of positions and the grade scale for those positions are what will decide the future course of this Department.

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PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

CLINICAL PATHOLOGY DEPARTMENT

CC-63
Serial No.

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July 1, 1971, through June 30, 1972

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INTRODUCTION

At the beginning of FY 1972, Dr. Jerome B. Block, Associate Director, Clinical Center, was appointed Acting Chief of the Clinical Pathology Department, and continued in that capacity until March 1972. At that time, Dr. James D. MacLowry was appointed Chief of the Clinical Pathology Department. The Department is very appreciative of Dr. Block's participation during a very difficult time.

The total workload for the Department increased as anticipated in spite of a decreased inpatient census. Some of the increase could be attributed to the increased outpatient load and to the increased complexity of research protocols. It is felt that another factor in the workload increase was caused by investigators sending tests to the laboratory that they had previously performed themselves but were no longer able to handle because of reduced personnel. Much as the Department would like to be able to offer these services to any investigator, the reality must be appreciated that there has been no increase in technical staff within the Department. The increased workload, failure to expand the Department in terms of personnel and space, the demoralizing and restrictive effects of the newly imposed wage grade escalation control and the frustration of trying to participate fairly in the contradictory policy of upward mobility of employees has brought this, as well as many other departments, to a seemingly critical impasse. There was no way that all of these conflicting pressures could be removed simultaneously and still maintain the quality of patient care services which are required. The next year will see the reduction of services which is regrettable but unavoidable unless relief from these pressures is forthcoming.

The pressures described above, which are certainly not unique to this Department, may serve as a stimulus for constructive thought and action in the area of developing a centralized laboratory facility not only for the scientists involved with direct patient care problems, but eventually for all scientists on the NIH reservation. Centralized laboratories are far more economical in terms of operating costs, space, and personnel requirements and, of equal importance to the research mission of the NIH, can provide much better quality results than can be obtained in the vast majority of the small satellite laboratories which are presently in existence on the reservation. A flexible personnel system which is supported and funded by the Institutes and based on their changing research needs must be realistically evaluated and implemented in the coming fiscal year if there

is to be any hope of continuing to function at the projected level of activity with present restraints. Performance of this work on a contract basis has proven to be not only very costly, but in general is of a much poorer quality and at times is completely unsatisfactory.

SUMMARY OF ACHIEVEMENTS

Clinical Chemistry Service

Recent Progress

The increase in the workload continued to dominate and direct the activities of the Clinical Chemistry Service, with more than 40,000 test results now being generated each month. There does not appear to be any likelihood of this trend changing.

The quality control programs that were instituted several years ago, and then eliminated with rewriting of the Beta-computer programs, were re-introduced in an improved version, permitting study of the within-run quality of data as well as the day-to-day and month-to-month quality. The uric acid and creatinine AutoAnalyzers were interfaced to the computer using a directory system and a BSL data-entry console to enter patient identification. This system does enable the benefits of the accuracy of computer reading of results to be obtained on serum samples for which originally there was no way of matching results and patient identity. The urine creatinine method was upgraded to the AutoAnalyzer II system, thereby achieving a rate of analysis of 90 samples per hour with improved reproducibility and less carry-over between samples.

The uric acid and glucose methods were changed to use specific enzymes for analysis, reducing the incidence of erroneous results caused by measuring various drugs as analytes by the previous methods that measured reducing substances. Immunodiffusion and immunoelectrophoresis were put on a routine basis for the subfractionation of gamma globulin and quantification of its components. Differentiation of tissue origin of elevated alkaline phosphatase concentrations in serum was performed using heat- and urea-inactivation, and the routine laboratory method. A new spectrophotometer was inserted into the AutoAnalyzer system for measuring lactate and pyruvate to reduce carryover between samples. Minor modifications were made to many of the other laboratory methods and instruments.

New equipment was evaluated when it was believed that improved quality of results could be achieved, or a shorter turn-around accomplished without sacrifice of quality. Thus, a new flame-photometer was studied for electrolyte determinations, as were a concentration computer for AutoAnalyzer data, several pipetting systems, and a new enzyme assay system to replace the unit that had been designed for use at NIH but which never operated with the dependability required for routine operation. An electronic sampler programming unit for AutoAnalyzers was examined to determine if sampling errors could be eliminated from all the AutoAnalyzer systems now in use.

The Section continues to perform well in quality assurance surveys and is a referee laboratory for most of the national surveys.

The Section staff is cooperating with the Nursing Service in setting up of a central specimen collection and distribution facility to speed the processing, and rerouting of samples in the Chemistry Service and elsewhere within the NIH campus.

The medical students, and other staff employed under various "stay-in-school" training programs, continue to make a real contribution to the operation of the Section. All night and weekend coverage of the laboratory after 5:00 p.m. is done by the medical students who have gained increasing confidence and expanded the range of tests that they can now perform.

Training

During FY 1972 the service participated actively in the training of both resident physicians and the technical staff. Weekly meetings were held with the technical staff at which many different aspects of clinical chemistry were reviewed including instrumentation, methodologies and a discussion of cases of interest. Daily meetings were held at which the senior staff, resident physicians, and senior technologists discussed patient and laboratory problems. Dr. David Thomas was particularly active in introducing the residents to clinical problems by taking them on rounds twice a week and investigating situations where closer collaboration between patient-care physicians and the laboratory staff would bring benefit to the patients. In this way the laboratory was able to perform additional and nonroutine laboratory tests rapidly to permit the most appropriate data to be produced for making a diagnosis.

The reinstitution of the Residency Training Program brought many benefits to the staff at all levels in the Chemistry Service. Dr. Thomas was able to orient the training of the residents toward the application of clinical chemistry to medical problems while Dr. Godhman emphasized the requirements necessary to obtain accurate data. A form of training that many of the Clinical Chemistry Staff became involved in was the selection and use of instrumentation and methods for specific research applications for investigators and their technicians.

The resident physicians throughout the different sections of the Department took advantage of training courses offered by several companies to learn the operation of new instruments as part of their Residency Training Program.

Research and Development

In cooperation with Dr. R. B. Friedman, Drs. Young and Thomas developed a data base of effects of physiological variables and therapeutic measures on laboratory tests. This data base, containing more than 12,000 effects, was created in both the NIH WYLBUR time shared computer system and the Department's CDC 3200 computer. Searches can now be made to identify the effects of a particular drug on laboratory tests, which drugs affect a laboratory test, and the mechanism of action of drugs. This system has been of value

in interpreting abnormal results arising suddenly in patients undergoing therapy for different disorders. A pilot study was initiated in which the administration of drugs to patients is correlated with the change in laboratory data in the patients. This is being done in a retrospective blind manner so that biases in interpretation can be excluded.

Dr. Thomas and Dr. Young investigated the metabolic error of renal glycosuria and the metabolism of xylose during tolerance tests. Dr. Young also worked with Dr. Peter Goldman (NIAMD) on the influence of diet on the composition of body fluids. Dr. Young continued his collaboration with Drs. C. D. Scott and J. E. Mrochek of Oak Ridge National Laboratory on the application of high-resolution analyses to patient-care and diagnostic problems. Dr. Young is still working with Dr. Mary Coleman (George Washington University) on the investigation of metabolic abnormalities in autistic children.

Dr. Nathan Gochman continued his development of analytical methods specific for compounds routinely measured in the clinical laboratory. He modified several of the analytical methods to the AutoAnalyzer II to improve precision, reproducibility and speed of analysis. He evaluated many of the analytical instruments discussed under the 'Recent Progress' heading. He studied a spot-test system to provide rapid screening for abnormal creatine phosphokinase activities. He is currently evaluating the DuPont ACA (Automated Chemical Analyzer) to expand the range of tests that can be performed in the laboratory at night and for out-patients as they are seen in the clinic. He is studying the cause of an abnormal band appearing in the electrophoresis of LDH isoenzymes in an apparently normal woman.

Dr. Thomas is completing studies on "Transient bisalbuminemia with altered dye-binding associated with drug administration" and "Macroamylasemia due to immunoglobulinbound amylase."

Mr. H. H. Nishi continued his development of instrumentation for automated pediatric analyses and collaborated with Dr. B. E. Statland in investigating the use of the centrifugal fast analyzer in enzyme assays. The precision of assays obtained with this combination of instruments greatly exceeds that being performed elsewhere.

Dr. R. T. Bowser initiated a program to study glucagon and other hormones by radioimmunoassay. He is also investigating various methods for T_3 and T_4 assay. Dr. H. C. Nichols is working with Dr. Bowser in the setting up of additional radioimmunoassay procedures.

Dr. B. E. Statland intensively investigated the capabilities of the centrifugal analyzer and studied LDH and alkaline phosphatase assays in particular. He is collaborating with Dr. Thomas and investigators in NIAMD on the isoenzymes of alkaline phosphatase in relation to cystic fibrosis and in a healthy pediatric and adolescent population.

Dr. Mark Zweig began a detailed study of the operation and performance of the DuPont ACA with comparison of data generated by the routine laboratory.

Many of the routine laboratory staff were involved in making enzyme analyses as part of the Clinical Center Hepatitis Study. While the extra 5000 analyses have placed a considerable burden on the staff they accepted their involvement in such an important venture. While the study was in progress we examined critically the gamma glutamyl transpeptidase assay that appears to be a more sensitive indicator of liver disease than the traditional GPT assay. Upon further statistical evaluation we expect to introduce the new test in routine practice.

Staff Appointments

Dr. David W. Thomas resigned his appointment as Visiting Associate to return to Australia on completion of 13 months fruitful work within the Department.

Dr. Robert T. Bowser joined the staff as an Immunologist.

Future Plans

It is hoped to implement several tests using radioimmunoassay by means of a contract with a commercial laboratory. Although this is not an entirely satisfactory mechanism it appears to be the only means whereby these important tests can be made available to the patient-care staff.

We expect to implement analyses through the DuPont ACA so that it will be possible to provide at least some results to patient-care physicians before their patients are sent home (in the same way that is now possible for hematology results through the Coulter Model S).

It is hoped to use the centrifugal fast analyzer for enzyme analyses on a routine basis to get maximum precision. Variability has been reduced to less than 2% for most of the common tests so that it is now possible to anticipate the identification of many small day-to-day changes of possible clinical significance that were overlooked previously.

The CLAUDE drug-interaction file will be introduced on a regular basis for automatic interpretation of laboratory data throughout the Clinical Center if the pilot study now in progress proves satisfactory. It is hoped that this will form the basis of an information center on laboratory data for clinicians throughout the U.S.A. for whom questions can readily be answered by telephone after interrogation of the system.

Hematology Service **Recent Progress**

The first floor Hematology Laboratory attempted to maintain a high degree of precision in the face of an ever-increasing workload. Because of the marked increase in OPD visits, bone marrow requests, radioisotope procedures, and fingersticks, the laboratory personnel were not able to implement new techniques and equipment which would be time and labor saving.

A new automated whole blood platelet counter was tested and found to be a more precise instrument for platelet counts. Unfortunately, most of the

time and labor saved by implementing this system was consumed by the evaluation procedure and the lack of data processing for transmission of results.

In attempts to find new more fully automated equipment to alleviate some of the increased workload, a new automated hematology system was evaluated. Although the system was accurate and reproducible, it did not analyze fingerstick specimens. The lack of time, space, and personnel to modify this system to our advantage forced us to stop the evaluation and continue along in our present ways.

The same was true for an automated differential counter. Without the necessary senior staff and technical help we could not evaluate an analytical system which could have not only saved countless hours of work, but possibly add new insight and understanding into leukocytes in malignancy and infection.

Not only was the increased workload felt in the first floor laboratory, but requests for intricate coagulation studies increased by 40%. The various Institutes initiated a variety of requests to evaluate patient hemostatic problems, and in several Institutes partial or full coagulation evaluations were incorporated into the research patient protocols.

Senior professional staff were completely inundated with a 25% increase in bone marrow interpretation and a 100% increase in clinical-laboratory consultations regarding Clinical Center patients and problems.

The marked increase in OPD visits and the related number of fingersticks, bone marrow, and coagulation evaluations without any compensation in professional staff proved very costly and prohibited any meaningful progress this year.

Training

The Hematology Service has continued to play a major role in the success of the clinical elective in Hematology. Three weekly conferences were held with the Hematology Service and with the staff of the NCI to discuss patient problems and bone marrow interpretation.

Each day at two predesignated times the senior staff spent one hour to interpret bone marrow smears for the Clinical Associates of various Institutes. This was in addition to and separate from the final and complete bone marrow interpretation.

The Hematology Service had several guests throughout the year from various laboratories from around the country. These guests came to learn procedures and techniques used in our laboratory.

During the year the Hematology Service had one medical student and one college student who were interested in an introduction to laboratory hematology.

In the patient-laboratory consultations given by the senior professional staff an attempt was made to educate the clinician in the proper use of laboratory procedures and their application to the patient's problem.

The Hematology Service was actively involved in the Coagulation Subcommittee of the American Society of Hematology. This committee was producing a film concerning various aspects of the hemostatic process. This film will be of value to medical students, laboratory personnel, interns and residents.

Research and Development

Dr. Sally Marchesi and Dr. Harvey Gralnick purified human Factor VIII and began producing antibodies against it. It is hoped that with a specific antibody an immunoassay can be devised which will allow greater accuracy and reproducibility of Factor VIII assays. This antibody will also allow attempts at localization of Factor VIII synthesis and further studies of cross reactive material in hemophilia and von Willebrand's plasma, as well as the biologic and immunologic aspects of the decay of Factor VIII.

Drs. Marchesi and Gralnick continued their investigation of the presence of fibrin(ogen) degradation products in the urine of patients with renal disease, especially lupus nephritis. In conjugation with this work, Dr. Harry Givelber performed homologous ^{125}I fibrinogen survivals in patients with lupus nephritis.

Dr. Marchesi investigated the kinetics and purification of fibrinogen degradation products. Antibodies against purified degradation products will allow more specific determination of a variety of clinical hemostatic disorders.

Dr. Givelber and Dr. Gralnick finished the evaluation of the Hemolog, a new automated analytic system for Hematology.

Drs. Gralnick and Givelber in association with Dr. John Finlayson characterized a new fibrinogenopathy; fibrinogen Bethesda II.

Dr. Gralnick and Dr. Peng-Whang (NCI) collaborated in an attempt to classify leukemia by functional and maturation studies.

Dr. Andrew Horvath investigated the effects of a proteolytic inhibitor on the effects of fibrin cross linking. He also devised a test to measure fibrinolysis in-vitro by incorporating ^{125}I fibrinogen into the test euglobulin sample. In preliminary studies this proved to be a satisfactory and sensitive indicator of fibrinolysis in-vivo.

Dr. Henry Tan investigated the ultrastructure of Blastocystis hominis, a potential pathogen in man, and with Dr. Arthur Boylston investigated the capping phenomenon of human lymphocytes.

Dr. Boylston produced specific immunoglobulin antisera. Hopefully, with these antisera, Dr. Boylston will be able to add a new dimension to the

classification of human lymphoid and myeloid malignancies.

Dr. Givelber performed chromium platelet and red cell survivals in chronic lymphocytic leukemia in an attempt to evaluate the benefits of splenectomy.

Drs. Andrew Horvath, Luis Villa and Harvey Gralnick reclassified acute lymphocytic malignancies on a morphologic basis. It is hoped that this new classification will allow a better guide to specific curative therapy.

Dr. Villa and Dr. Gralnick worked on an inhibitor to blood coagulation in a patient with type III hyperlipoproteinemia.

Staff Appointments and Changes

None

Future Plans

Unless more Senior staff is available to the Hematology Service, education, research, and development will seriously suffer. The Hematology Service has survived in the last three or four years on the use of residents as senior people. This has resulted in the lack of a solid base from which to grow and caused cessation of important work every year when residents or fellows leave the department. Likewise with the tremendous burden of service work on the staff only abortive attempts to improve laboratory tests or implement new procedures is possible. Also, the continuing demand for non-automated procedures (bone marrows, fingersticks, coagulation, and radioisotopes) limits the progress of the service and jeopardizes the precision and accuracy of the laboratory values on which much of the clinical research and patient care of the NIH is based.

Microbiology Service **Recent Progress**

The antibiotic sensitivities laboratory continued to service an increasing number of requests for serum level assays for a variety of different antibiotics. An increase was also noted in the number of requests for antibiotic combination studies. Antibiotic sensitivity tests and serum level assays were frequently provided for the Bethesda Naval Hospital and Malcolm Grow Hospital, Andrews Air Force Base on special request.

In November, 1971, investigational research was started on a rapid disc assay for the determination of antibiotic serum levels. This method has the significant advantage of providing an answer four hours after the test has been set up, and the physician therefore obtains the results on the same day that the serum was drawn. A parallel study using the new rapid disc assay and the standard microtiter serial dilution method revealed that the new method in addition to being faster has as much, if not more, precision than the standard technique. The rapid disc assay, therefore, replaced the dilution technique in April, 1972.

The Enteric Laboratory investigated two new schema described for the identification of the Enterobacteriaceae. The study was undertaken to improve the diagnostic laboratory's handling of this group of bacteria, but in addition to insure recognition of other unusual bacteria which may superficially resemble enterobacteria. A "six tube" setup previously described by other investigators was compared, along with the new commercially available R/B system, to the classical biochemical format for the identification of the Enterobacteriaceae. The six tube setup was evaluated as being extremely practical for the diagnostic laboratory, yet at the same time, permitting maximal accuracy in identification as compared with the standard format utilizing 15 biochemical reactions. The R/B system, which uses two tubes, although time saving, was judged to be unsatisfactory due to numerous ambiguous results. The six tube setup was thus instituted as the standard procedure for the diagnostic laboratory and has performed with great success.

Added awareness of the rapid loss of viability of anaerobic organisms, if left exposed to air, resulted in improved techniques for the handling of specimens requiring anaerobic culturing. Such specimens are now plated promptly and the plates immediately deposited into a jar held under a constant flush of CO_2 until the technologist is ready to place them in the final anaerobic container.

The data processing effort made considerable advances this year. Computer request cards were evaluated within the department and the final card form was determined. These cards were generated internally by the department and are now used in a number of ways on a daily basis. They form the basis for a number of accession and work lists for each of the laboratory modules and are used by the technologists to enter their on-going work and final results. In addition, they are being used to generate report forms on which the final report is entered manually. The failure of Berkeley Scientific Laboratories to fulfill their contract obligations to the department slowed the institution of report generation and accumulation of a data bank by the computer. It is hoped that these latter two goals can be realized in FY 1973. It is also planned that in early fiscal 1973, the computer pre-punched microbiology request cards will be made available to the wards in the same way as is done in the Chemistry and Hematology Services. All of the technologists in the laboratory have learned how to handle these request cards and their acceptance of the cards and work lists has been favorable.

Training

Four Clinical Pathology Residents rotated through the service this year: Drs. Mark Zweig, Luis Villa, Dennis Goldfinger, and Henry Nichols. All participated in departmental laboratory rounds and the consultation rounds with NIAID and Bethesda Naval Hospital. In addition, three other physicians spent from two to eight weeks rotating through the service: Dr. Larry Staker (National Naval Medical Center, Bethesda), Dr. John Finerty (IMT, NIAID), and Dr. Edward Raleigh (Georgetown University Medical Center). One medical student, Mr. Robert Kagan (Georgetown Medical School) spent six weeks with the department during which time he evaluated a rapid assay method for determining gentamicin serum levels.

Research and Development

In January of 1972, under the direction of Dr. V. J. Brenner, a developmental study in the field of anaerobic bacteriology was started. The scope and direction of the anaerobe laboratory at present is to provide more intensive efforts in the isolation and identification of anaerobic bacteria. This project was stimulated by numerous recent reports on the importance and high frequency of occurrence of anaerobes in infectious processes. The anaerobe laboratory continues to operate on a developmental basis until greater expertise and practical working schema are developed through direct experience using selectively accepted specimens.

Substantial progress on a gas chromatographic technique for identification of bacteria was made. The basic technical and operational problems in the setting up of a new technique were solved and the method must now be practically applied to demonstrate its usefulness.

Present research, carried out by Dr. Charles H. Zierdt, is centered on culture of Blastocystis hominis without bacteria, on which it is dependent in vitro. It can now be cultured with only one supporting bacterium. This bacterium unfortunately is thus far insusceptible to drug treatment because of its intracellular growth. In the past year it was proved that B. hominis is a strict anaerobe and this fact alone made it necessary that bacteria be present, to provide the required anaerobiosis. By reducing the medium and excluding oxygen (pre-conditioning) it was possible to make significant progress in axenic culture, or culture without the presence of bacteria. B. hominis was observed to ingest and digest bacteria while growing in the heated microscope stage culture chamber, and viewed with Nomarski interference phase light. B. hominis was found to be resistant to 20 mcg/ml of amphitericin B which is useful information in case of fungal contamination of the cultures. It is also additional evidence of the protozoan nature of B. hominis.

To study the ultrastructure of B. hominis, Dr. Zierdt and Dr. Henry Tan, of the Hematology Service, Clinical Pathology Department, collaborated to make ultramicrographs of B. hominis ultrasections. Fixation of this organism is very difficult. While many of the electron micrographs are beginning to relate to those taken with the light microscope, more progress in fixation technique is required. From this study it may be possible to construct the B. hominis reproductive cycles.

Collaborative research with Dr. Bruce Phillips, Laboratory of Microbial Immunity, NIAID, was concerned with Blastocystis hominis infection in gnotobiotic guinea pigs. Infections were obtained in a small percent of animals. The investigators are now working with newborn guinea pigs and larger inocula of B. hominis. From this it is hoped to get fatal infections, with demonstrable pathological changes in the guinea pigs.

Work on the bacteriophage strains of Corynebacterium acnes of Dr. Charles Zierdt was almost completed by year's end. It was necessary to repeat most of the serum neutralization data which had previously been performed. We are propagating larger quantities of phage at the facilities for mass cell

production headed by Mr. David L. Rogerson of the Laboratory of Nutrition and Endocrinology of NIAID. The phage produced will be used for DNA and guanine-cytosine determinations, and also will be supplied to the American Type Culture Collection for storage and distribution. Growth kinetics of Corynebacterium acnes are being studied for two purposes. First, a method is needed for producing large quantities of C. acnes cells for an endotoxin study we intend to initiate. Second, little is known of C. acnes growth characteristics. Since this is the most important inhabitant of the skin of normal individuals from a quantitative standpoint, these basic studies are important to an understanding of the skin microbiota.

Miss Anne D. Jennings conducted the following three studies in collaboration with the Clinical Mycology Section, LCI, NIAID. First, sensitivity of Cryptococcus neoformans to 5-fluorocytosine was studied using isolates obtained before and after therapy of human and experimental murine infections. In man, 1 out of 36 pretreatment and 10 out of 15 post-treatment isolates were drug resistant. Among the 22 patients treated at NIH, 5 of the 10 treatment failures could be accounted for by the development of drug resistance. In experimental cryptococcosis, resistance of post-treatment isolates to 5-fluorocytosine could be diminished by concomitant therapy with both 5-fluorocytosine and amphotericin B. Studies in progress on the mechanism of action of 5-fluorocytosine have shown that clinically obtainable concentrations of 5-fluorocytosine not only failed to decrease viability of C. neoformans, but also failed to depress utilization of glucose of oxygen by sensitive strains. In 18 pre-treatment isolates from man, drug resistant mutants were present in 16 at a frequency ranging from 0.01 to 17 per 10^6 wild type cells. The resistance of these single step mutants was essentially complete and did not seem to be due to suppression of cytosine deaminase, as judged from concoritant 5-fluorouracil resistance. Among 11 pre-treatment isolates of Candida albicans, all were sensitive to 5-fluorocytosine. Post-treatment isolates were not studied.

Second, Cladosporium trichoides was isolated from an autopsy specimen of brain. Because there are only 13 other isolations of this fungus in the world's literature, the properties and taxonomy of this species have been subjects of marked disagreement. A study of this isolate and six other isolates of C. trichoides was undertaken to clarify these problems. In addition, 5-fluorocytosine was shown to prevent illness in experimental murine cladosporiosis. If this finding can be confirmed in man, it will provide the first effective chemotherapy for this otherwise fatal infection. A case report will be published on this unusual finding.

Third, a retrospective survey of the laboratory's records was done to determine the frequency of various species of Aspergillus as causative agents in invasive aspergillosis. Although A. fumigatus is often stated to be the sole cause, other species accounted for 36% of 39 infections documented at postmortem examination.

Use of the computer was initiated in two different areas in an experimental way to aid in the diagnosis of bacteria and quality control antibiotic sensitivity testing. Most of these computer programs were developed by

Dr. Richard Friedman and utilize mathematical models which he developed for other purposes. In a preliminary study, it was found that, given the appropriate biochemical information, the computer could serve as a valuable check on the routine identification of organisms in the family Enterobacteriaceae. Work is continuing along these lines to make this approach applicable for atypical or unusual members of this family and also to include organisms which fall in the group of non-fermenting Gram negative rods.

The second project initiated in FY 1972 is a study of the usefulness of a computer check of each antibiotic sensitivity pattern to see if it is reasonable compared with our very large existing data bank. If the antibiotic sensitivity pattern is very different from the expected pattern, then the technologist is alerted to a potential error in diagnosis, methodology or an unusual isolate. In addition, a program is being used to force the computer to make its independent diagnosis of the bacteria exclusively from the antibiotic sensitivity data. There is very little experience in this area of study, but already there have been some promising results.

A small research and development contract was let to Biospherics, Inc., of Rockville, Maryland to study the problem of the use of radioactive carbon 14 in early detection of positive blood or sterile fluid cultures. Preliminary work in this department suggested that this approach might be possible, but the workload of the department precluded in-house development.

Staff Appointments and Changes

Dr. James D. MacLowry resigned as Acting Chief, Clinical Pathology Department in June 1971.

Dr. James D. MacLowry was appointed Chief, Clinical Pathology Department in March 1972 and will continue as Chief, Microbiology Service.

Dr. Vee Jay Brenner was appointed Assistant Chief, Microbiology Service in January 1972.

Future Plans

During FY 1973, the anaerobe laboratory will extend itself to be a service laboratory, offering intensive anaerobic bacteriology on request. It will, however, continue developmental studies to improve and also simplify current techniques.

The technique of gas chromatography for the identification of organisms holds most promise as an aid in the identification of anaerobic bacteria. Assessment of this will be made as the anaerobe laboratory uses the chromatographic data in the identification of difficult organisms.

The antibiotic sensitivities laboratory foresees a continuing increase in requests for antibiotic serum levels, combination studies, and serum inhibitory and bacteriocidal levels. Because of this, continued research is projected in order to improve and expand our capabilities in assaying for

the variety of antibiotics available.

The data processing activity both in terms of establishing a permanent patient file and using the computer to make diagnoses and check results will be given a high priority.

Research, Development, and Laboratory Automation Section

Recent Progress

New developments were severely limited by the reorganization of Berkeley Scientific Laboratories, our prime contractor. Berkeley was sold by Tracor, its parent company, to Northrup Aviation in February 1972, and in the process, the company elected to default on a majority of the projects they had agreed to complete during the contract year. While this default made it impossible to implement a backup system in Hematology, a Cathode Ray Tube Terminal Interrogation System, a new improved version of the AutoAnalyzer system, all of which had been planned for this year; we were able to salvage some work from the project and through our own staff, able to complete a number of other projects.

Computer System

1) New Printer:

A new model 501 Control Data Printer was installed in March 1972 in the 3200 computer system to replace the 512 printer. The new printer has the advantages of higher speed (1200 lines per minute) and a clearer print type.

2) 4.2 Operating System:

To facilitate installation of the new printer as well as to take advantage of the improved error checking routines of the new version of the operating system, our in-house programming section installed a new version of the computer generating system. Since our "Beta" program system required extensive modification of the operating system, this was a difficult and time consuming task, but once completed, it markedly improved our error checking capability.

3) Documentation:

While work on this project had been in progress for the past eight years, new developments and the constant pressure of developing a prototype system made it very difficult to maintain adequate documentation of the system. Recently, however, the system reached a level of high reliability and some stability, and we felt adequate documentation was imperative. Towards this end we instructed the contractor to spend a substantial part of last year's and this year's contract documenting the system.

Shortly before the reorganization of BSL, they delivered the documentation

to us. It is quite extensive and includes full flow charting, system documentation and listings on all programs in the "Beta" system. BSL also supplied a complete operator's manual and circuit diagrams on all hardware elements of the system.

We believe this extensive documentation put us in a much more tenable position to service and maintain the system.

Chemistry:

1) Additional Tests on-line:

This year two additional tests, creatinine and uric acid, were placed on-line in Chemistry.

2) Drug-Test Interaction File:

Members of our department assisted the Chemistry Department in placing a large (10,000 entry) drug test file on the Wylbur Computer System. The file, once in the system, is accessible for rapid retrieval of any possible interaction either by drug involved, test involved, response, or mechanism. A large (2,000 entry) reference file was also placed in the system to allow rapid access of any reference. The file was in use for over 8 months of the year and during that time the Chemistry staff made extensive use of the computer system for text editing and retrieval.

Hematology:

1) Differential Consoles:

Two specially built consoles to enter white blood count differentials were placed in operation this year. The two consoles were in daily operation for the last 6 months of the year and allowed rapid on-line entry of all differential results. These consoles made storage of differentials in the patient files possible for the first time so that these data are now available for incorporation in cumulative summaries, special correlative studies and daily reports.

Microbiology:

See the Microbiology Service report for progress.

Clinical Pathology Department - General

1) Quality Control Programs:

A new set of quality control programs was incorporated into the Beta System. These programs provide the standard quality control statistics (mean and standard deviation) on any or all of our chemistry and hematology procedures. A second set of programs provides listings of out-of-limits samples where the limits can be arbitrarily set for each test.

These programs now operate in the batch mode but have been designed so that they can be used in the real-time mode. We plan to institute such a real-time, process control system in the future.

2) Discharge Summaries:

The program to generate discharge summaries on all patients hospitalized in the Clinical Center was put in weekly operation. All patients now have such a summary printed 30 days after discharge (to allow incorporation of all late data) and placed in their charts by Medical Records. The system was in operation for over 6 months of the year and greatly aided chart review.

3) Interchange with DCRT:

To facilitate correlative research studies using Clinical Pathology Data, a collaborative study was initiated with DCRT to see if the large computer capacity as well as extensive program library could be utilized to assist researchers who wished to search our files for patients with specific lab values (or ranges of values) or wished to prepare special patient summaries. Our staff worked closely with DCRT on this project and they succeeded in writing a program to convert our patient files into their own retrievable format.

The program is fully operational and each week we supply DCRT with an updated magnetic tape copy of our patient records. To date over 20 researchers have utilized this service and obtained specialized retrievals.

4) Evaluation of a Replacement System:

With the ending of BSL's support of their Clin-Data System it became imperative to seek alternative systems to interact with our main computer system. Our present configuration includes two Clin-Data Systems (one in Hematology and one in Chemistry) which serve as interfaces with the main CDC 3200 computer system. Since BSL discontinued support of these systems and further development became impossible, we sought to evaluate the equipment supplied by other manufacturers. To this end we travelled to La Jolla to see the new Control Data 1700 system; to Swedish Hospital in Denver, Colorado to see the new Honeywell system; to the University of Colorado to see their IBM 1800 system. We also attended presentations of the new Univac System and on the IBM System Seven. In the previous year we had visited laboratories serviced by Spear, DNA, DEC, IBM 1130 and IBM 1800 systems. After carefully evaluating all these systems, we felt the CDC 1700 system was best and most compatible with our present system.

5) Labels for Hepatitis Study:

A program was written to generate randomly numbered check-digited labels for the Clinical Center hepatitis study.

Future Plans

We plan to conduct the major development effort on a contract basis as has been done in previous years. The program consists of six items and one or more contractors may be employed to perform the work on each of these items.

1) Laboratory Accessioner/Sampler

The goal of this project is to produce a set of machines which will replace the current laboratory accessioner/sampler system developed by Airborne Instruments Laboratory. This current system, which is eight years old, is built upon obsolete technology and requires an inordinate amount of maintenance work to keep it functioning. We are proposing to have designed a new system based on the same operating concepts, but utilizing modern technology.

2) Data Acquisition System

The goal of this project will be to produce a set of machines which will monitor the analytical instruments, primarily of the AutoAnalyzer type, and will process the output data of these instruments to the point of reduction to digital form and then store this information on incremental magnetic tape. The magnetic tape can then be used as input to our primary computer system and can be processed as is currently being done. This system will serve as backup to our present on-line data acquisition system, which is integral with the CDC 3200 computer and offers a possibility of improvement and expansion to eventually replace the current on-line data acquisition system.

3) Development of Census Files and Associated Processors

Our patient census files are now being maintained manually on punch cards and stored physically in filing cabinets. This is a relatively crude means of maintaining census files, compared to the other available clinical laboratory computer systems. All of the other systems incorporate integral files which are stored on magnetic disks and are immediately available for checking input and output of the main system, and can also be maintained automatically by processor routines which utilize the admission and discharge data as it comes from the Admissions Office, presumably in machine readable form. This project is for the design of such magnetic disk files and processor routines.

4) Addition of Bone Marrow Processors to the Beta System

Bone marrow data is currently reported on a standard computer form, but this is done via a makeshift system and it is not possible to retain this information in the computer file. After each day's information is reported, it is then lost to the computer system. This project is to design, develop, and implement a system compatible with the current operating system which will permanently store the bone marrow data in useful retrievable form.

5) Cathode Ray Tube Input/Output System

One of the most useful features of computer systems is the ability to search the files at will and randomly retrieve a particular record or item of desired information. The communications device that is most commonly used for this application is the Cathode Ray Tube Terminal (CRT). There are a number of reasons for this: a) Because of the integral keyboard and display screen the terminal is eminently suited for two-way communication. b) The device is virtually completely noiseless. c) It is extremely rapid, easily achieving transmission rates of 2400 baud. d) The information is displayed in labile form, that is on a phosphorescent screen, and no hard copy printer can be attached to the terminal, and only selected displays transformed into hard copy. Such a feature in our clinical laboratory system would have many applications. The most obvious of these are use by the physician and other clinical personnel for inquiry and retrieval of the most current laboratory information, even before the daily reports have been printed; and retrieval and review of recent laboratory information in summary format to aid in interpretation of current laboratory values of clinical signs. Laboratory personnel can use the CRT for retrieval of current data when they are reviewing, verifying, or otherwise preparing the data for final reports and the laboratory personnel can use the transmission capability of the device to edit the computer files and correct any erroneous data it contains. As a first step in this direction this project asks for implementation of a single CRT terminal.

Subsequently more terminals can be added and additional applications can be implemented.

6) Modification of On-Line Processor Routine

The on-line processor routines which we are presently using are those initially designed for the Beta System and require that the entire day's on-line run be completed and the results transmitted to the computer before further processing of this information into final units (the only useable form for this data) can be performed. This places severe restrictions on the laboratory personnel and has obvious disadvantages, such as delay in reporting of stat tests. This project is for modification of these on-line routines so that the data is further processed periodically throughout the run and any final results will be available on demand with, at most, a few minutes delay.

Although our in-house resources, particularly personnel, are quite limited, we will continue to attempt to do some development work using these resources. Obviously this work must be limited since usually these same personnel are also used in the daily operation and maintenance of the system which must receive first priority. Under these conditions it is impossible to set firm time schedules for the accomplishment of such work.

A considerable amount of work during the past year has gone into development of the Microbiology system. The system is very near completion and, in fact, an operational trial is currently being conducted in the Microbiology Service. We will continue to work on this system next year and will probably bring it to a stage of initial implementation.

We have also been working on the positive sample identification system for the Hematology Service utilizing the concept and hardware developed by Biologics, Inc. This work has come to a temporary halt because of the loss of our only engineer. Arrangements have been made with BEIB to continue this work and if these arrangements work out satisfactorily, this project should also be completed next year.

One of the most annoying problems in our system, as with most other clinical laboratory systems, is the generation of the source documents, i.e., the test requests, and particularly the imprinting of patient identification and location information on these requests in machine readable form. Currently this is done in our laboratory by computerpunching the information into a set of cards for all inpatients and then providing a stack of these prepunched request cards to the clinical personnel at the nursing stations. Obviously this leaves a large number of requests from out-patients and from newly arrived inpatients for whom this information must be manually punched into the request cards. This is a slow and awkward task and is certainly undesirable. Recently a set of instruments has been designed and built by Standard Register Company which provides for imprinting information on a standard tab card in machine readable form. A surprising amount of versatility has been designed into this machine in that information can be entered in four different modalities. It can be punched manually using keys, it can be transferred from a thick plastic identification card, it can be transferred from a thinner plastic tab card, or it can be preset into the machine utilizing slide switches. The machine has been designed so that information in any of these four modalities can be positioned in any desired format on the tab card that is produced. We plan to obtain some of these machines on lease next year and to develop and study a system whereby they might be used in the Out-Patient Department and perhaps at the nursing stations also, to generate our test requests.

Office of the Chief

Service Productivity:

The total Clinical Pathology Department workload, in terms of tests performed, increased by 106,743 test requests, or 11.6% over the previous year. During the same period the average patient census decreased 3.6%, making the overall increase in demand for laboratory services per patient 12.0%. The test work units/patient/day increased 12.9% from 17.1 in 1971 to 18.3 in 1972. There was also a 6.0% increase in available technologist days, mainly attributed to increased overtime that was necessary to handle the 11.6% increase in workload.

Table 1A lists the average monthly workload statistics by quarters for FY 1972 for the Clinical Pathology Department.

Tables 1B, 1C, and 1D provide a breakdown of the data listed in table 1A by each of the laboratory services.

Training:

The program for training Resident Physicians in Clinical Pathology was re-instituted with five first year residents beginning training in July 1971. Two Clinical Associates, Dr. Richard Friedman in the Research, Development and Laboratory Automation Section, and Dr. Arthur Boylston in the Hematology Service, continued their work for the second year. No new Clinical Associates started in July 1971.

The senior staff and residents continued to have weekly Clinical Laboratory Rounds at which interesting patients and laboratory problems were presented and discussed. Each of the Services conducted at least weekly conferences with the resident staff and discussed detailed laboratory problems related to each area. Weekly conferences with the technical staff of each Service concerning patient problems were continued throughout the year. Each of the Services continued participation in clinical rounds with many of the Institutes.

The professional and technical staff continued formal training through the NIH Graduate Program and other institutions. A summary of courses completed by the staff in FY 1972 is included in Table 2.

Organizational Changes:

The Cell Chemistry Section was phased out in July 1971 because of the over-riding service commitments of the Department. Dr. Arthur Boylston, who had been working in that section, joined the Hematology Service.

Staff Appointments and Changes:

Dr. David W. Thomas, Visiting Associate, left the Department to return to his native Adelaide, Australia.

Dr. Richard Friedman left to accept a position of Assistant Professor, Department of Medicine, University of Wisconsin.

Dr. V. J. Brenner was appointed Assistant Chief of the Microbiology Service.

Dr. Edward N. Raleigh, a 4th year Resident in Pathology at the Georgetown University School of Medicine, was assigned to the Microbiology Service as a Guest Worker, for the period of April 1 to May 31, 1972.

Dr. James D. MacLowry was appointed as Attending Physician, National Institute of Allergy and Infectious Diseases. This appointment is in addition to his duties as Chief of the Department, as well as Chief of the Microbiology Service.

Dr. Harvey R. Gralnick, Chief of the Hematology Service, was, in addition, appointed as Senior Investigator for the National Cancer Institute.

Drs. Dennis Goldfinger, Henry Nichols, Bernard Statland, Luis Villa and Mark Zweig joined the Department as Residents in Clinical Pathology in July, 1971.

Dr. Bernard Statland, Resident, began a year of leave to work as a Researcher in the Clinical Chemistry Department of the Rigs Hospitalet in Copenhagen, Denmark.

Dr. Harry M. Givelber, Dr. Andrew E. Horvath, and Dr. Henry K. Tan passed the examinations of the American Board of Pathology in both Clinical and Anatomic Pathology.

Appointments within the Department:

Dr. Jerome B. Block served as Acting Chief, Clinical Pathology Department, from June 1971 to March 1972.

Dr. James D. MacLowry was appointed Chief, Clinical Pathology Department in March 1972.

Dr. Daniel Bruce was appointed Chief of the Research, Development and Laboratory Automation Section.

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PRESENTATIONS AT MEETINGS

Friedman, R. B.: Laboratory Automation. Talk given at a course on Laboratory Management at Walter Reed Army Hospital, October, 1971.

Friedman, R. B.: Baysean Diagnosis. Talk given at Medical Information Systems Seminar sponsored by the Office of Clinical and Management Systems, Clinical Center, NIH, January, 1972.

Friedman, R. B.: A Program to Simulate the Patient Physician Encounter. Presented at the 68th Medical Education Congress, Chicago, Illinois, February, 1972.

Friedman, R. B.: Automation in Microbiology, Talk at Center for Disease Control, Atlanta, Georgia, May, 1972.

Friedman, R. B. and MacLowry, J. D.: Computer Program for Quality Control in Antibiotic Sensitivity Testing. Talk given at American Society for Microbiology, Philadelphia, Penna., April, 1972.

Givelber, H. M.: Evaluation of an Automated Hematology System. Talk for American Society of Clinical Pathology, Atlanta, Georgia, February, 1972.

Gochman, N.: An Automated Determination of Uric Acid by the Use of a Uricase-peroxidase System. National Meeting AACC, Seattle, Washington, August, 1971.

Gochman, N.: The Automated Clinical Laboratory. National Conference on Electronics in Medicine, Chicago, Illinois, March, 1972.

Gochman, N.: Continuous Flow Chemical Analysis: Fundamentals and Practice. N. Y. Metropolitan Section AACC, N. Y., April, 1972.

Gralnick, H. R.: Abnormal Fibrinogen and Hepatomas. Symposium of Hepatomas, Uganda Institute, Uganda, Kampala, July, 1971.

MacLowry, J. D.: Current Topics in Microbiology. Faculty member of this workshop sponsored by American Society of Clinical Pathologists, Chicago, Illinois, October, 1971.

MacLowry, J. D.: Practical Aspects of Diagnostic Clinical Microbiology. Lecture given to freshman medical class, George Washington University School of Medicine, Washington, D. C., March, 1972.

MacLowry, J. D.: Review of Bacteriology and Pharmacology of Antibiotics. Lectures given to Otolaryngology Basic Science Course, Armed Forces Institute of Pathology, Washington, D. C., April, 1972.

Nishi, H. H.: An Ultramicro Fluorometric Method for the Determination of Plasma Glucose on One Microliter of sample. National Meeting AACC, Seattle, Washington, August, 1971.

Nishi, H. H.: Automation of Ultramicrochemical Analyses. AACC Capital Section, Bethesda, Maryland, March, 1972.

Statland, B. E.: Optimization of Alkaline Phosphatase Assays Using the Centrifugal Analyzer (ROTOCHEM). Fast Analyzer Conference. Oak Ridge, Tenn., December, 1971.

Statland, B. E.: Recent Experiences with Alkaline Phosphatase and LDH Assays with the Centrifugal Analyzer. Indiana State Clinical Chemistry Conference, Indianapolis, Indiana, March, 1972.

Statland, B. E.: Curvilinear regression analysis approach for nonlinear enzyme reactions. 8th International Congress on Clinical Chemistry. Copenhagen, June, 1972.

Thomas, D. W.: Renal Tubular Function in Renal Glycosuria. 8th International Congress on Clinical Chemistry. Copenhagen, June, 1972.

Young, D. S.: Dietarily-induced modification of body-fluid constituents in normal individuals. National Meeting AACC, Seattle, Washington, August, 1971.

Young, D. S.: The Future of Clinical Chemistry. University of California, San Diego, California, February, 1972.

Young, D. S.: A laboratory-based computer system for drug interferences in Clinical Chemistry. Capital Section AACC, Bethesda, Maryland, March, 1972.

Young, D. S.: Computers and Clinical Chemistry. Alpha Chi Sigma, Washington, D. C., March, 1972.

Young, D. S.: The Origin of Serum Enzymes and the Basis for their Variation. University of Minnesota, Minneapolis, Minnesota, May, 1972.

Young, D. S.: Data Acquisition and Computers. 8th International Congress on Clinical Chemistry, Copenhagen, Denmark, June, 1972.

Young, D. S.: A laboratory-based drug information system. 8th International Congress on Clinical Chemistry, Copenhagen, Denmark, June, 1972.

Zierdt, C. H.: Properties of Corynebacterium acnes Bacteriophage. Read at American Society for Microbiology Annual Meeting, Philadelphia, Pennsylvania, April, 1972.

OTHER ACTIVITIES

MacLowry, J. D., Gralnick, H. R., and Young, D. S.: Members of Advisory Committee for Clinical Laboratories Performance Evaluation in the United States, set up by the Department of HEW under the auspices of the Technical Analysis Division, National Bureau of Standards.

Table 1A

Average Monthly Workload Statistics for the Clinical Pathology Department, FY 1972

	1st Quarter	2nd Quarter	3rd Quarter	Estimated 4th Quarter	Estimated 12 Month Projection	Actual FY 1971 Total
Average Patient Census	317	302	335	318	318	330
Available Tech. Days	1,115	1,159	1,354	1,209	14,511	13,689
Total Test Work Units	127,730	120,874	136,257	128,287	1,539,444	1,427,926
Total Tests	84,554	80,612	91,983	85,716	1,028,594	921,851
Test Work Units/ Tech. Day	114.6	104.5	100.6	106.6	106.6	104.5
Test Work Units/ Patient Day	18.9	19.8	19.1	19.3	19.3	17.1

Table 1B

Average Monthly Workload Statistics for the Clinical Chemistry Service, FY 1972

	1st Quarter	2nd Quarter	3rd Quarter	Estimated 4th Quarter	Estimated 12 Month Projection	Actual FY 1971 Total
Average Patient Census	317	302	335	318	318	330
Available Tech. Days	393	392	479	421	5,056	4,501
Total Test Work Units	46,459	43,999	51,847	47,435	569,217	571,143
Total Tests	37,680	35,961	42,370	38,670	464,043	444,196
Test Work Units/ Tech. Day	122.6	112.8	108.1	114.5	114.5	127.3
Test Work Units/ Patient Day	6.9	7.2	7.3	7.1	7.1	6.8

Table 1C

Average Monthly Workload Statistics for the Hematology Service, FY 1972

	1st Quarter	2nd Quarter	3rd Quarter	Estimated 4th Quarter	Estimated 12 Month Projection	Actual FY 1971 Total
Average Patient Census	317	302	335	318	318	330
Available Tech. Days	423	449	489	453	5,433	4,922
Total Test Work Units	49,993	49,846	56,538	52,125	625,507	495,195
Total Tests	32,162	31,543	36,408	33,371	400,452	316,476
Test Work Units/ Tech. Day	118.5	111.2	115.8	115.2	115.2	100.9
Test Work Units/ Patient Day	7.4	8.2	7.9	7.8	7.8	5.9

Table 1D

Average Monthly Workload Statistics for the Microbiology Service, FY 1972

	1st Quarter	2nd Quarter	3rd Quarter	Estimated 4th Quarter	Estimated 12 Month Projection	Actual FY 1971 Total
Average Patient Census	317	302	335	318	318	330
Available Tech. Days	313	320	386	340	4,078	4,219
Total Test Work Units	31,276	27,029	27,872	28,725	344,704	361,586
Total Tests	14,712	13,108	13,205	13,675	164,099	171,184
Test Work Units/ Tech. Day	100.6	85.6	72.2	86.1	86.1	86.6
Test Work Units/ Patient Day	4.7	4.4	3.9	4.3	4.3	4.4

Table 2

List of Formal Training Courses Completed by Staff FY 1972

Commissioned Officers			
Friedman, R. B., M.D.	MEDI - 200	Fall 71	FAES
Goldfinger, D., M.D.	Radiological Health	1/10-21/72	NIH
Statland, B. E., M.D.	Elementary Computer Program Systems	Fall 71	DCRT
Statland, B. E., M.D.	Information Storage and Retrieval - I	Fall 71	FAES
Statland, B. E., M.D.	Stat. 100 - Introd. to Statistics	Spr. 72	FAES
Villa, Jr., L., M.D.	MEDI - 200	Fall 71	FAES
Villa, Jr., L., M.D.	Biol. 108 - Immunohem. & Blood Transfus.	Spr. 72	FAES
Zweig, M., M.D.	Tr. Seminar for Automatic Clin. Analyzer	2/21-25/72	DuPont
Civil Service			
Bagley, J.	Biochem. 100 - Introd. Biochem.	Fall 71	FAES
Bowman, M.	Behavioral Problems of Employees	Fall 71	Employee Health Service
Bowman, M.	Data Processing (Data Handling)	3/16/72	Sci. Prod.
Bowser, R. T.,	Radioisotope Training Course	1/10-21/72	NIH
Byrd, T.	Preventive Maint. of Lab. Equip.	3/16/72	Sci. Prod.
Calloway, P.	Procurement Procedures	3/24/72	NIH
Carter, B.	Fluorescent Microscope Techniques	4/14/72	D.C. Soc. Med. Tech.
Carter, B.	Biol. 11 - Introduction Virology	Spr. 72	FAES
Cricenti, M.P.	Genetics 101 - Bacterial Genetics	Spr. 72	FAES
Elkin, E.	Clerical Admin. Proc. - Travel	9/30/72	NIH
Elkin, E.	Effective Writing	10/18-29/71	Comm. Skills Comp.
Feld, M.	Behavioral Problems of Employees	Fall 71	Employee Health Service
French, S.	Behavioral Problems of Employees	Fall 71	Employee Health Service
Gersch, S.	Stat. 104 - Analysis of Variance	Fall 71	FAES
Gochman, N.	Training Seminar for Auto. Cl. Analyzer	Spr. 72	DuPont
Gordon, A. B.	Fortran IV	Spr. 72	DCRT
Grubbs, C.	Refresher, Shorthand	Fall 71	NIH FAES
Grubbs, C.	Math 10 - Introd. College Math.	Fall 71	FAES
Haycock, M.	Behavioral Problems of Employees	Fall 71	Employee Health Service
Herz, J.	Supervisory Management Course	Spr. 72	NIH, Cl. Center
Herz, J.	Cholesterol & Triglyceride Determinations	Fall 71	Sci. Prod.
Huber, C.	Supervisory Management Course	Spr. 72	NIH
Jackson, G.	Supervisory Management Course	Spr. 72	NIH
Jackson, G.	Fibrinolytic Mechanisms	Fall 71	Am. Soc. Clin. Path.
Jackson, K. K.	3-595 COBAL Programming Fundamentals	Fall 71	USDA

Table 2 (cont.)

List of Formal Training Courses Completed by Staff FY 1972

Civil Service (cont.)

Kidwell, J.	Chem. 103 - College Chemistry I	Spr. 72	FAES
Knight, P. L.	FORTRAN IV	Fall 71	DCRT
Knight, N. R.	Math. for Lab. Technicians	Spr. 72	Montgomery County Ad. Ed.
Knight, N. R.	Coagulation Workshop	4/13/72	DC Soc. Med. Tech.
Langill, R.	Biol. 108 - Immunochematology	Spr. 72	FAES
Langill, R.	Fluorescent Antibody Technique Workshop	Spr. 72	DC Soc. Med. Tech.
Nishi, H.	Phys. 100 - Biomedical Instrumentation	Fall 71	FAES
Nishi, H.	Gen. 14, Sci. and Technical Writing	Spr. 72	FAES
Nutter, C.	Biol. 11 - Introductory Virology	Spr. 72	FAES
Ross, F.	F. 9902 Digital Computer Concepts	2/21-3/3	Control Data Corp.
Pestaner, L.	Stat. 100 - Introduction to Statistics	Spr. 72	FAES
Schmitz. J.	Training Seminar for Auto. Clin. Analyzer	Spr. 72	DuPont
Schmitz. J.	Enzymes and Atomic Absorption	Spr. 72	Sci. Prod.
Shearon, M. P.	3-595 COBAL Programming Fundamentals	Fall 71	US Dept. Agr.
Stimpson, J.	3000L MSOS System Usage - Part I	Fall 71	Control Data Corp.
Stimpson, J.	" " " " Part II	Fall 71	Control Data Corp.
Tan, H., M.D.	Math 265 - Modern Algebra	Fall 71	GWU
Tan, H., M.D.	Math 299 - Mathematical Analysis	Fall 71	GWU
Tan, H., M.D.	Math 266 - Modern Algebra	Spr. 72	GWU
Tan, H., M.D.	Scientific German	Spr. 72	GWU
Turner, P.	Differentiation of Enteric Organisms	Fall 71	Am. Soc. Med. Tech.
Turner, P.	Workshop on RbSystems for Ident. of Enterobact.	2/16/72	Diagnostic Research Inc.
Webster, C.	Math. 11 - Calculus	Fall 71	FAES
Webster, C.	Biol. 101 - Adv. Bacteriology	Fall 71	FAES
Wilson, T.	Lipoprotein Characterization Workshop	Spr. 72	DC Soc. Med. Tech.
Woodside, M.	WYLBUR (Introduction)	Fall 72	NIH
Woodside, M.	Advanced Typing	Fall 72	Montgomery County Ad. Ed.
Smith, B.	Clerical Administrative Procedures	9/29/71	NIH
Young, J. T.	Toxicology Workshop	4/14/72	DC Soc. Med. Tech.

July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

DEPARTMENT OF DIAGNOSTIC RADIOLOGY

CC-26
Serial No.

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ACCOMPLISHMENTS

As in previous years and in keeping with our mission, the most important accomplishment of the Department of Diagnostic Radiology was the provision of the highest quality and most complete diagnostic radiology service for the Clinical Center patients. There were no occasions in which a diagnostic challenge was not satisfied by old, current or newly developed radiologic techniques. By keeping abreast of all developments in the specialty field, equipment and accessories were selected to permit the broadest latitude of diagnostic utilization.

In addition to serving patients, a chest X-ray service was provided for NIH and Rocky Mountain Laboratory employees, as well as emergency X-ray service for the former. In the past 6 months there was a 50% decrease in local chest X-rays because of a new EHS policy to rely more on skin testing for tuberculosis. There is some reason to believe that this policy may again be reversed in the future.

A total of 45,305 X-ray studies were performed on 25,330 patients and employees during the year (Table 1). Compared with the 1971 volume (Table 2), there was a decrease of 311 X-ray studies and of 2465 patients. This decrease was directly related to the drop off in the EHS chest studies as noted in the preceding paragraph. The volume of special study procedures was significantly increased by 417. Any increase in special studies is significant not only because of the related impact on diagnosis, but also because the man hour input averages 8.5 to 11.5 per study or for this increase equates to 3544.5 to 4795.5 additional man hours.

Although we had foreign visitors from the Netherlands, England, Japan and Italy, there were fewer this year probably because the radiological meeting circuit did not as frequently approximate this area.

Clinical Associates, Drs. Kent Pearson, Richard Jaffe, Meredith Weinstein and Albert Cook were certified by the American Board of Radiology in June. Dr. Ronald Saldino was selected for a fellowship in pediatric radiology at Children's Hospital in Boston for 1973. This year's Clinical Associates have been the most outstanding compared with any group in the past.

The Department staff contributed to many professional conferences and programs throughout the year.

Generally:

1. A daily radiological conference on current cases of interest was held in the Department for our staff and any other interested NIH staff members.

2. A weekly neuroradiological conference was held in the Department presenting all current neuroradiology studies.

3. As requested, staff members conducted conferences for the radiological preparation for other specialty boards. This year, a series was given for neurologists, neurosurgeons, surgery and internal medicine board preparation.

4. The Combined Clinical Staff Rounds and Clinical Center Grand Rounds have been served by radiologists as needed.

Specifically:

1. Dr. Richard Jaffe presented monthly conferences on congenital heart disease at the Bethesda Naval Center and alternate monthly conferences at D. C. General Hospital.

2. Dr. Michael Vermess presented monthly conferences at D. C. General Hospital on the uncommon radiological manifestations seen at NIH.

3. Dr. Jean Herdt continued to be a member of the weekly NCI lymphoma staging conference.

4. Dr. Richard Jaffe conducted a conference on congenital heart disease at Emory University on April 18.

5. Mr. Russell Rankin presented a movie and general information on the requirements for becoming an X-ray technologist at the Springbrook High School on May 5.

6. Dr. Richard Jaffe was the radiologist member of the cast for Jules Bergman's ABC news story on the NHLI Coronary Intervention Study on January 14.

7. Dr. Jean Herdt presented a paper, "Spinal Angiography - Technique and Results" to the D. C. Society of Radiologic Technologists on January 15.

8. Dr. Jean Herdt presented a paper, "Radiologic Techniques in the Evaluation of Cancer" for the Providence, Rhode Island and Rochester, New York Surgical Societies at NIH on February 4.

9. Dr. David Kumpe presented a lecture, Teaching Radiology to Medical Students, at the annual meeting of the American Roentgen Ray Society in Boston in September and at the annual meeting of the Radiological Society of North America in Chicago in December.

10. Mr. Neil French served as president of the District of Columbia Society of Radiologic Technologists and as a member of the NIH advisory committee for the Upward Mobility College.

11. The Chief and Mr. Russell Rankin continued to serve as consultants to Drs. Sarah Knutti and Charles Lowe in planning X-ray facilities for the clinical and research areas of NICHD.

In addition to routine duties, the Chief continued as consultant in radiology of congenital heart disease at the Bethesda Naval Center; as USPHS counselor for the Radiological Society of North America; as a member of the Commissioned Officer Medical Review Board; as a member of the Environmental Differential Evaluation Committee; as a member of the Diagnostic Research Committee; as a member of the Human Pituitary Conference Committee; and as a member of the Job Restructuring Board.

Dr. Betty E. Hathaway retired from the position of Chief on June 30 with Dr. John L. Doppman becoming the incoming Chief. Dr. Michael Vermess was designated Associate Chief of the Department in December with Dr. Jean Herdt continuing to serve as Deputy Chief.

In August Dr. Kent Pearson spent a week at the University of California Medical Center learning the technique of using powdered tantalum for contrast radiography of the larynx, pharynx and esophagus. However, inordinate delays in getting FDA clearance of this experimental preparation to date have prevented the initiation of our program.

SIGNIFICANT CONTRIBUTIONS TO RESEARCH

In the widest sense of the definition of research, the Department gave the broadest support to research. The catheterization of a wide variety of arteries and veins permitted assays for hormones in a specific area; injection of drugs and chemicals helped evaluate organ and tissue response and localized treatment of disease and neoplasms. The radiologist moved into the performance of lung and bone biopsies with the visualization afforded by the advanced electronics in fluoroscopy equipment. The new fiberoptic bronchoscope permitted direct visualization, photography and biopsy of the bronchi by the radiologist and the new fiberoptic duodenoscope permitted similar evaluation of the stomach and duodenum. Further advancements in tomography, cineradiography, videorecording and other specialized diagnostic tools also contributed to this progressive ability of the radiologist to provide invaluable support for clinical research.

Animal radiography, autoradiography and duplication of X-rays were performed as a routine service for the advancement of scientific research. Consultative services were supplied to many investigators who required radiological methods.

Consultation was provided NICHD in designing new clinical and research facilities, NIAID in the planning for a new radiographic facility for small bowel biopsies, and NHLI in the design of an animal radiography suite.

In the research and development of new equipment, the Chief consulted with companies on stereoradiography, contrast doubling devices, and a new thermographic device and the potential of marketing an image intensified fluoroscopy unit utilizing fiberoptics for light intensification.

Individual research pursuits included:

1. Drs. Richard Jaffe and James Scherer performed the radiological evaluations for the Coronary Intervention Study of NHLI which was initiated in mid year.

2. Dr. Albert Cook was the radiology member of the NIDR study of familial osteodysplasia.

3. Dr. David Kumpe made a study of the combination of constrictive pericarditis and protein-losing enteropathy.

4. Dr. Kent Pearson conducted studies of the roentgenographic aspects of duodenum in cystic fibrosis, short-limbed dwarfism, fibrogenesis imperfecto ossium and hereditary angioneurotic edema of the gastrointestinal tract.

5. Dr. Michael Vermess developed new techniques in prolonged contrast visualization in the livers of animals which may hopefully be applied to human subjects.

6. Dr. Jean Herdt was involved in a continuing study of the anatomy and dynamics of spinal cord vasculature.

7. Dr. Michael Vermess was appointed as Attending Radiologist to D. C. General Hospital.

MAJOR PROBLEMS ENCOUNTERED

Personnel turnover and sick leave continued to be problems. The turnover rate of 12% was lower than in previous years with a 20-30% level. However, the grade control regulation made it more difficult to hire technicians at the GS-5 level rather than the GS-6 and GS-7 level and also resulted in acquiring technicians with less experience. In the clerk typist pool (one full-time and two part-time typists) a resignation resulted in an 8-week lag to get a replacement and an 8-week period to become proficient in preparing X-ray reports. Since this occurred during a high workload period, a backlog began to accumulate and could only be reduced by mobilizing weekend typing forces and being fortunate in having those willing to work on the weekend. Some improvement might be realized in this area if the part-time positions were converted to full time as our part-time typists seem to have less urgency to have continuous employment.

Sick leave was outstanding during the flu-respiratory infection periods. In addition, there was a serious cardiovascular illness with nearly two months sick leave and a major surgery.

It was a notable year for morale depression of managerial and staff employees alike. The vacillating wage-freeze, promotion freeze and hiring freeze policies accompanied by inept payroll management assured a constant state of emotional

turmoil for employees. For managers there was a distinct impression that the highest level managers presumed that all departments were so comfortably overstaffed that they could easily accommodate the loss of services of any number of persons who were encouraged to enroll in the so-called Upward Mobility College. To date, the Department has three X-ray technologists and two film library clerks enrolled with more planning to apply in the near future. Since there has been no patent effort to decrease the time allowance taken from the job for this purpose, it can be assumed that someone believes that high quality professional standards can be maintained with any degree of decrease in the work force. In addition to the three technicians in the program, one of them was selected to be on an advisory committee for this program and attended a two-hour meeting every two weeks with the meeting conducted during the work day. The problem was further compounded by the fact that the Federal City College is not an accredited institution, credits attained in this local endeavor would not be transferrable to any accredited college, and the achievement level of the courses given would probably be equivalent to a high school level. For any clinical department that can survive the loss of man hours to such a program, the future will present the immense problem of establishing the job promotional value of such a degree.

On top of the above program came STRIDE. Departments not yet completely depleted by the Upward Mobility College could certainly be devastated by adding a new program which permitted the abrupt and complete loss of valued employees. With such totally inconsiderate highest level management, the lower levels of management can be assured of progressively depressing years in the future as well as a progressive deterioration in the quality of the programs under their direction.

Equipment breakdown problems were at a low level because of the active equipment replacement program.

With fewer radiologist applicants this year for the Cord Program, the projected problem of obtaining radiologists for the Clinical Center is nearing realization. By fiscal 1974, it might be reasonably predicted that some scheduled Clinical Associates may fail to meet their committments to come to NIH. A plan to handle this inevitable development should be forthcoming. The salary range will need to be competitive, namely, $36,000 to $60,000.

CHANGES AND IMPROVEMENTS MADE

The Department was redecorated with carpet and new furniture installed in all of the patient waiting areas and offices. The patient reception area was vastly improved in efficiency and appearance by renovation and redecoration.

A new linear tomographic unit was installed replacing a 1954 model. The quality of studies, such as full chest tomography for NCI, was considerably improved and the time to perform such studies was decreased by 20%.

Changes in handling NHLI outpatients resulted in improvement for all concerned. Previously, all of the heart outpatients arrived in the Department around

11 A.M. Under the new program, patients arrived throughout the morning and those who were able carried their own films back to the Heart doctor for his viewing at the time he saw the patient. There was far less waiting time for the patients in the Department and the workload considerably more manageable for the technicians.

New laboratory coats of dacron with an attractive department identification improved the appearance of staff members, and employer-provided work shoes were welcomed by the technicians.

Having exhausted the present storage areas for X-ray jackets, a program was initiated to retire to the Federal Records Center all X-ray studies which were inactive for the past ten years. Although there are many known standards as to when to destroy X-ray studies, the ideal one for NIH would be at least 25 years. Since the Federal Records Center has no storage limits, this may be an attainable retention period.

Plans were completed, and equipment, where appropriate, ordered for the following improvements:

1. Conversion of a large mop room to a diagnostic X-ray room.

2. A 400 volt power source to permit the use of three phase X-ray equipment in the Department and 7th floor heart catheterization laboratory. Such equipment will provide the highest attainable quality X-ray studies.

3. An X-ray facility in the Outpatient Department.

4. Updating of the special studies room (6S229), the fluoroscopy and special studies back up room (6S225) and the animal X-ray facility.

A xeroradiographic attachment for the Sienograph mammography unit was leased for an indefinite period. The units cannot be purchased at the present time. Xeroradiography provides another visual perspective for the difficult task of arriving at conclusions from X-ray studies of breasts. This unit was needed for the new breast cancer program of NCI.

The problem of losing valuable X-ray studies from our X-ray museum will hopefully be solved through a new attempt to make copies of all museum films.

PROPOSED FUTURE OBJECTIVES

The provision of the highest quality diagnostic radiological service for the Clinical Center patients will continue to be the major future objective. Continuous assessment of scheduling, reporting, X-ray techniques and patient comforts is essential to improve the efficiency and quality of the Department endeavor. Constant pursuit of new information in the specialty and encouragement of constructive criticism will continue.

Future aspirations for an automated X-ray film filing system persist. Although there are current limitations in the system, not the least of which is the volume of films in NIH patient X-ray jackets, these should be solved in the near future. Such a system would be very efficient.

A Mosler film transport system is planned for the future. Films could be carried from the remote storage area to the Department as well as in an undeveloped state from the X-ray rooms to the dark room. One employee could be shared in the remote area with the Medical Records Department which shares the general file storage area. X-ray technicians could perform 30% more exposure work and be in constant attendance to the patient if they were relieved of loading and unloading cassettes and carrying undeveloped films to the dark room.

Television monitoring of remote patient waiting areas as well as the diagnostic rooms is a future objective. Not only would this improve patient safety but also improve technician efficiency.

An entirely new diagnostic radiology facility in the new NCI building is at present a future objective. It may be that competition for space in this new building will be such that our present facility would be more advantageous.

The Kodak Company has been in the process of research and development of a new automatic microfilming device which would microfilm all films as they exit from the automatic X-ray film processor. This device is nearing the marketing phase and is well worth consideration for the future.

HONORS AND AWARDS

No specific honors or awards were received during the year.

PUBLICATIONS

Sixteen publications authored and co-authored by a 10-member radiologist staff for the fiscal year 1972 include:

Buchignani, J. S., Cook, A. J., and Anderson, L. G.: Radiographic findings in familial facial osteodysplasis. Am. J. Roentgenol. Radium Ther. Nucl. Med. In press.

Cavanagh, R. C., Buchignani, J. S., and Rulon, D. B.: RPC of the month from AFIP. Radiology. 101: 195-200, 1971.

Doppman, J. L.: The "Nidvi" theory of spinal cord arteriovenous malformations: a surgical recommendation based upon arteriographic findings. Brit. J. Radiology. In press.

Doppman, J. L., Zapol, W., and Pierce, J.: Transcatheter embolization with a silicone rubber preparation. Experimental observations. Invest. Radiol. 6: 304-309, 1971.

Fried, L. C., Doppman, J. L., and Di Chiro, G.: Direction of blood flow in the primate cervical spinal cord. J. Neurosurg. 33: 325-330, 1970.

Pearson, K. D., Buchignani, J. S., Shimkin, P. M., and Frank, M. M.: Hereditary angioneurotic edema of the gastrointestinal tract. Am. J. Roentgenol. Radium Ther. Nucl. Med. In press.

Pearson, K. D., Steinbach, H. L., and Bier, D. M.: Roentgenographic manifestations of the Prader-Willi Syndrome. Radiology. 100: 369-377, 1971.

Shimkin, P. M., Buchignani, J. S., and Soloway, M. S.: Blood borne metastases to the kidney. Angiographic investigation of 3 vascular tumors. Acta Radiologica. In press.

Shimkin, P. M., DeLellis, R. A., Carolla, R. L., and Weinstein, M. A.: Graft-versus host disease. Radiographic findings in a patient with severe intestinal involvement. Radiology. 102: 623-624, 1972.

Shimkin, P. M., DeVita, V. T., and Doppman, J. L.: Arteriography of an ileal carcinoid tumor. J. Canadian Association of Radiologists. 22: 259-260, 1971.

Shimkin, P. M., Doppman, J. L., Powell, D., Marx, S. J., and Ketcham, A. S.: Demonstration of parathyroid adenomas by retrograde venography. Radiology. 103: 63-67, 1972.

Shimkin, P. M., and Pearson, K. D.: Unusual arterial impressions upon the duodenum. Radiology. In press.

Shimkin, P. M., Soloway, M. S., and Jaffe, E.: Metastatic melanoma of the gallbladder. Am. J. Roentgenol. Radium Ther. Nucl. Med. In press.

Vermess, M., Pearson, K. D., Einstein, A. B., and Fahey, J. L.: Osseous manifestations of Waldenström's Macroglobulinemia. Radiology. 102: 497-504, 1972.

Vermess, M., Stein, S. C., Ajmone-Marsan, C., and Di Chiro, G.: Angiography in "Idiopathic" focal epilepsy. Am. J. Roentgenol. Radium Ther. Nucl. Med. In press.

Zapol, W. M., Kolobow, T., Doppman, J. L., and Pierce, J. E.: Response of ductus arteriosus and pulmonary blood flow to blood oxygen tension in immersed lamb fetuses perfused through an artificial placenta. J. Thor. Cardiovasc. Surg. 61: 891-903, 1971.

Table I

Number of X-ray Examinations

Fiscal Year 1972

	Patients	X-ray Examinations	Examinations per Patient
Inpatients	13,602	27,297	2.01
Outpatients	6,993	13,038	1.86
EHS	4,735	4,970	1.05
Total	25,330	45,305	

Table 2

Comparison of Activity

Fiscal Years 1971 and 1972

	1971	1972	Change
Total number of patients examined	27,795	25,330	- 2465
Total number of X-ray examinations	45,616	45,305	- 311
Number of X-ray examinations per patient	1.64	1.78	+ .14
Total neurocardiovascular special procedures	1317	1734	+ 417

July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

EMPLOYEE HEALTH SERVICE BRANCH

CC-05
Serial No.

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July 1, 1971. through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
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OCCUPATIONAL SAFETY AND HEALTH - A NEW ERA

This has been an exciting year for the vast number of professional personnel in the occupational health field. America witnessed new landmark legislation that will provide superior occupational safety and health standards for approximately 57 million workers in nearly 4 million business establishments. This historic legislation known as the Williams-Steiger Occupational Safety and Health Act was signed into law by President Nixon on December 29, 1970 and took effect on April 28, 1971. Congress declared in this Act that no employee will suffer diminished health, functional capacity, or life expectancy as a result of his work experience.

The various facets of the new law will have many startling implications for the practice of medicine and on future trends for employee health care in industry and government agencies. Our staff and the Employee Health Unit as a whole are not directly affected by provisions of OSHA at this time, but we are excited about the new standards and programs that will evenutally benefit Federal employees and the professional workers in each government employee health program.

We were very busy and enthusiastic this past year in carrying out old programs and developing innovative projects in each of the four categories as authorized by Public Law 79-658:

1. Treatment of on-the-job illnesses and injuries
2. Pre-employment and other examinations
3. Referral of employees
4. Preventive programs relating to health

TREATMENT OF ON-THE-JOB ILLNESSES AND INJURIES

Although we prefer to emphasize preventive medicine, emergency treatment of diseases and injuries occurring at work continued as one of our primary obligations. The fact that the NIH staff consists of many physicians and other medically oriented personnel places even a greater responsibility upon us to practice the most advanced and up-to-date form of emergency medicine. Nationally, a new medical specialty is evolving as a result of consumer demands and improved technology. As a result, improved emergency medical care procedures hopefully will evolve.

Our emergency procedures are under continuous evaluation and all major incidents

are carefully reviewed to enable us to make necessary improvements. We are particularly sensitive to cardiac emergencies and conducted an improved cardio-pulmonary resuscitation training course during the year with the assistance of the Anesthesiology Department of the Clinical Center and the Cardiac Surgery Branch of NHLI. All of our nurses and physicians received training. In addition the training and qualifications of the Fire Department Rescue Squad members was reviewed and updated. A new ambulance was obtained during the year which proved to be better than the converted truck previously used as an ambulance. The Fire Department is to be commended for its efforts in obtaining this ambulance which actually is a converted over-sized station wagon. For short distance runs, particularly those to Suburban Hospital, it became no longer necessary to use a Clinical Center ambulance. Portable defibrillation and EKG monitoring equipment was ordered for the ambulance.

Early in the year we requested and obtained approval to have private internists in the community designated as approved by the Bureau of Employees' Compensation to treat suspected occupational diseases. Prior to that time it was necessary to depend upon Institute clinicians for admission of employees to the Clinical Center, which at times was considered an imposition by the various Institutes involved. For example, cases of hepatitis which appear to be work-related, can now be referred directly to Suburban Hospital under the care of the approved private internist.

Later in the year, additional BEC changes occurred which made it even easier to utilize private physicians in the care of work-related injuries and diseases. Regulations were amended to provide for "free choice" of physicians except where Government facilities are available and appropriate to use. Therefore we now have much greater latitude to refer employees with work-related conditions to any physician whom we feel is professionally qualified. We are no longer restricted to the list of so-called "designated physicians".

Because of its isolation and the relatively small number of employees involved, providing emergency and other health services at the Poolesville Farm was extremely difficult to arrange. For more serious injuries and illnesses, we have relied upon the Poolesville area Fire Department Rescue Squad for transportation, and to date this has worked quite satisfactorily. Twelve employees received first-aid training during the year and efforts will be made to increase this number in the future. A small room was outfitted to serve as a first-aid station and the cooperation of the Guard Force was obtained to supervise the use of the room. We are still hopeful that a medical corpsman can be obtained who, although he would spend the majority of his time in other activites, would be avialable for first-aid and other emergency medical needs. The concept has been accepted, but has not been implemented because of personnel ceilings and other restrictions.

We continued to provide weekend and holiday coverage with one nurse on duty. Critical review of this service however revealed that this weekend coverage appeared to be under-utilizing the professional staff. During the year, an average of 7.5 employees were seen on Saturdays, with a range of 2 to 13. On Sundays, the average was 4.5, with a range of 1 to 12 employees seen. Holidays accounted for an average of 5.3 individuals with a range of 3 to 16. Approximately one third of these visits were employees of one CC Department who were returning to duty following minor illnesses and were instructed to check into

the Health Unit, even though they may have had certificates from their private physicians. Review of this weekend coverage will continue, and we expect to recommend changes in the near future.

Work related allergies to animal danders and dust continued to create many difficulties for NIH personnel. We were fortunate in being able to continue the consultation services of Dr. Halla Brown, Professor of Internal Medicine, George Washington University Medical School, who regularly came to the Employee Health Service every other week. She worked closely with several of the Immunologists in NIAID. We are quite excited about the work she is doing and the results she is obtaining in placing the practice of immunology on a more scientifically valid immunologic basis.

Environmental health hazards at NIH demand that our staff be alert to early signs and symptoms of possible work related illness. Up-to-date knowledge is therefore required on biohazards, chemical exposures, radioactive and chemical exposures, animal bites, and zoonoses, as well as infectious diseases related to patient care exposures. Surveillance and control activities are directed more to prevention than treatment and will be discussed in a later section of this report. Although prompt treatment for bites is, of course, necessary, we are more concerned that effective preventive measures be taken, not only to prevent bites, but to insure that exposed employees have pre-exposure rabies immunizations and tetanus toxoid protection. Careful review of procedures which we follow in the treatment of bites indicated that it is appropriate to treat all cat bites with prophylactic penicillin, and to continue to give gamma globulin for all monkey bites, recognizing at the same time that medical judgement on the part of the physician dictates the final course of action.

During the past year the range of medical emergencies treated was essentially the same as in past years. Our entire staff--medical, nursing and clerical employees--made conscientious efforts to receive, interview, and treat patients in a kind and understanding manner.

Our records indicate that we had a significant rise in the number of patients with mild to severe anxieties, most of whom were counselled by physicians and nurses. The more severe cases were referred to our staff psychiatrist for more complete psychiatric evaluation.

Several myocardial infarctions were diagnosed and given emergency care prior to transfer to community hospitals, or the Clinical Center. One case of cardiac arrest was of particular interest because of the experience it provided our staff. With the assistance of the NIH Firemen and many Clinical Center physicians, the patient received cardiopulmonary resusciation and effective cardiac action was restored. The patient, however, never regained consciousness and died approximately one week later, presumably the result of hypertensive encephalopathy.

There seemed to be an increase in the number of visitors and other non-employees reporting to our Clinic during the past year. We attempted to care for these people in a friendly manner and direct them to the nearest outside medical facility. Summer students also seemed to use our facilities more heavily than in previous years, even for relatively minor illnesses and complaints. We attempted to use these visits whenever possible for health education efforts.

PRE-EMPLOYMENT AND OTHER EXAMINATIONS

The pre-employment physical examination continued to receive careful scrutiny during past year. More and more evidence seems to be accumulating that this traditional procedure has limited value. Over a year has now elapsed since light duty positions have been exempted by the Civil Service Commission from the pre-employment requirement, and we have observed no adverse effects from this revision. Many industries have completely changed from the complete pre-employment physical examination to a screening type of evaluation which is carried out by nurses and paramedical staff. We have followed these developments closely and are now preparing proposals for rather extensive changes in our pre-employment examination procedures. Careful consideration will be given in the new proposals to those positions which involve patient care, animal exposures, and other duties which bring individuals in contact with biohazards, toxic chemicals, or radioactive materials, as well as positions which involve unusual or excessive emotional stress. Consideration will also be given to the continuing need for placement of the physically, emotionally or vocationally handicapped.

Our position on routine periodic physicals remained unchanged this past year. We offered no so-called "executive-type" examinations as we question their basic value as well as the appropriatness of offering such an extensive service to a relatively small segment of the employee population. Considerably more appropriate, and consistent with our responsibilities, are periodic examinations for occupational exposures. In this regard we continued to offer thorough examinations to NCI employees working in Bldg. 41 virus isolation facility. It is hoped that this program will serve as a pilot study to determine the best possible course of action to take for the control and surveillance of other biohazards at NIH. Because of the workload placed upon our Bldg. 10 Health Unit staff, we sent one of our physicians to the Bldg. 41 Health Unit one day a week to perform examinations. A larger number of examinations were scheduled and performed with fewer interruptions.

Although theoretically it may be desirable to offer periodic physical examinations to all employees, this could never be achieved because of staff and space requirements. Even if staff and space were available, it might not be in the best interests of national priorities to use medical care resources in this way. We would rather direct our efforts to the development of specialized examination programs which could be directed to specific categorical diseases. The early diagnosis and effective management of such diseases could prevent significant morbidity and mortality. Therefore, last year we began a cervical cytology screening program on a modest scale, utilizing the Bldg. 37 Health Unit. We hope to enlarge this program as available staff and facilities permit. In addition, we began negotiations with NCI for the creation of a breast cancer detection program. This program would be particularly exciting since we would have an opportunity for close cooperation with NCI clinicians in providing the various screening examinations. Employees would also have complete treatment available to them if they requested it.

Another area in which the partial disease oriented examination was given consideration is Au antigen surveillance for hepatitis. All new employees received this screening examination in FY 1972. Sickle cell trait screening,

discussed in greater detail in another section of this report, continued to be made available to all employees who specifically requested this examination.

Staff and budget limitations prevented us from making any progress in developing multiphasic screening programs. Although the value of this mass approach to preventive medicine has not been unequivocably proven effective, we would like to develop at least a pilot program.

There was considerable increase in the number of disability retirement examinations, most likely reflecting the increasing age level of the NIH population. Rarely was there an application which was not accepted--consistent, most likely, with current efforts to reduce employment levels.

Requests for preferential parking increased significantly and made it necessary for us to be more strict in our interpretation of medical requirements. Except for severe orthopedic and neurological conditions and relatively few cardiac conditions, there were a few additional valid reasons for preferential parking. We hope that our decisions will be scientifically valid and clear to all concerned. In turn, we solicit the support of management to accept our medical decisions since many employees in all levels are not happy when requests are denied. An analysis of preferential permits indicated that the great majority were given to higher grade level employees, suggesting that the present system is one which encourages abuse and the seeking of inappropriate "fringe" benefits.

REFERRAL OF EMPLOYEES

Public Law 79-658, which authorized Occupational Health programs for Federal employees, came into being in 1948 and adhered closely to guidelines established by the Council on Occupational Health of the American Medical Association. Last year the House of Delegates of the American Medical Association authorized revisions in these guidelines as published in the pamphlet "Scope, Objectives, and Functions of Occupational Health Programs". The AMA, which formerly approved only modified preventive programs and activities rather closely allied to work related conditions, now sanctions programs considerably broader in scope. Preventive medical procedures and treatment for non-work related conditions are now approved whenever such services are not as readily available in the community as they are in the occupational setting. This is a dramatic change in position for the American Medical Association and it can reasonably be expected that the Federal Government will also modify its restrictions. In reality, this has been gradually occurring over the past few years. The Civil Service Commission has encouraged Federal agencies to establish occupational health programs and to offer a broad range of medical services, limited only by budget and staff priorities. We will, of course, continue to refer employees with non-work related conditions to their own private physicians and community medical facilities for treatment when needed, and seek the good will and support of area private physicians. However, within budget and staff limitations, we will now follow a somewhat less stringent policy and will begin to provide outpatient treatment on a limited basis when such treatment will be mutually advantageous to management and the employee.

Recognizing the employee population as a valuable pool of normal controls and material for clinical study, Institute clinicians frequently called upon us to

assist them in obtaining referrals and/or blood samples from interested employees. Whenever requests would not place an unreasonable burden on us, we cooperated, provided that certain conditions were met. We insisted that confidentiality of our medical records be preserved, and only those employees who were informed in advance and indicated interest, were contacted by Institute clinicians. The number of investigators with whom we cooperated varied from month to month. Throughout the year we referred cases of herpes zoster from whom hyperimmune gamma globulin was obtained for treatment of young leukemic patients. The following are additional examples of cooperative referrals: An NHLI study on blood pressure which sought blood samples from white hypertensive employees, and black normotensive employees; another NHLI study which sought our assistance in obtaining cholesterol blood levels on employees who might be appropriate for inclusion in the Type II Hyperlipoproteinemia Study. Over 800 employees were seen and had blood drawn in the EHS. Au antigen screening was also performed.

We continued to obtain consultations from the various Institute clinicians, particularly from NCI Dermatology, NEI, NHLI Cardiac, NINDB Neurology, NIAMD, NIDR, and NIAID Infectious Diseases. We value the support we receive from the various Institute and pledge our continuing efforts to discourage corridor consultations and other services which many employees are prone to expect. Many of the more popular Institute clinicians find it very helpful to have a policy of seeing only those employees who are referred properly to them by the Employee Health Service.

PREVENTIVE PROGRAMS RELATING TO HEALTH

We attempted to place increased emphasis on prevention, or at best, surveillance and control of various health problems which, if diagnosed early, can be treated successfully. Although prevention and treatment cannot always be clearly separated, the following activities and programs are described in this section of the report because there were greater hopes of success whenever preventive elements of the program were given higher priority over treatment. Activities ranged widely from immunizations to mental health counselling and biohazards control.

Extensive revision of our Tuberculosis Surveillance and Control Policies and Procedures was completed this year. The periodic chest X-ray was de-emphasized in favor of the tuberculin skin test, a much more effective diagnostic screening technique. In view of scientific evidence on air-borne spread of tuberculosis, the definition of a tuberculosis contact was considerably changed to include only those individuals who have had close intimate and direct contact with a tuberculosis patient or sub-human primate. We appreciate the assistance we received from Mrs. Margaret Lamson, CC Nurse Epidemiologist, Dr. John Bennett, NIAID clinician, and from the Center for Disease Control.

Considerable work in a tuberculosis surveillance program involves routine scheduling and follow-up for skin tests and X-rays, much of which hopefully could be handled efficiently by a computer-based system. Approximately one third of a computer program for this project was completed during the year. It is anticipated that the initial phase of the project will be completed within the next four months. Dr. Frankel, one of our Associate Medical Officers, carried the entire burden of writing the program, and we regret not being able to call upon

DCRT programmers to assist him. We also regret not being able to obtain permission to use the more modern automated techniques such as CRT light pen input units. We place high priority upon this modest computerized program as we hope that it will be the basis for a larger automated system that can store and process extensive medical data on all employees.

Clinical data arising from 3000 volunteers participating in the CC Study on the Incidence of Au Antigenemia Among Hospital Employees was evaluated by Employee Health Service. Twenty-three subjects with Au antigen positive serum were extensively evaluated and were followed to assure a state of optimum health. Twenty patients with elevated serum enzymes were evaluated. Thirty-two patients with elevated serum lipids were also studied and placed on various types of appropriate dietary therapy. More ready access to inpatient beds in the Clinical Center would have been helpful. It is hoped that some day inpatient as well as outpatient care for employees with Au antigen positive hepatitis will be available.

On the basis of U.S. Civil Service Commission Bulletin 792-2, issued 10/7/71, we prepared tentative guidelines for medical surveillance of drug abuse at NIH. The guidelines were based on the premise that the medically unauthorized use of controlled drugs and the use of certain other narcotics and hallucinogens are by definition drug abuse. Employees with drug abuse problems will be treated the same as other employees with significant health problems and will be given opportunities for treatment and rehabilitation. As with our alcoholic rehabilitation program, we have requested that Personnel officials support us when a decision is made that the employee is unwilling or unable to accept medical treatment and/or rehabilitation. When indicated, urine screening for drugs will be made a condition of employment and we hope that Personnel will support us in this important element in the guidelines. Supervisors are encouraged and have a duty to refer employees who appear to be under the influence of drugs to the EHS for evaluation of fitness for duty. However, employees are also encouraged to seek assistance voluntarily and, whenever possible, we will assist them to the limits of available resources and/or refer them to other appropriate community organizations. About 20 previously active, but presently rehabilitated, addicts are now being followed by EHS. All medical data on these individuals is considered confidential.

Mental health counselling and consultation continued to have top priority during the past year. Management of emotional health problems constituted the single most critical and unmet employee health need. In spite of efforts to educate supervisors through seminars entitled "Understanding Employee Problems" and through various contacts with management personnel, we have only begun to scratch the surface in coping with this significant problem. We had 3 part-time psychiatrists, spending approximately 20 hours per week, along with an NIMH Career Development Officer who spent approximately half time. During the past month we learned that this latter officer accepted another assignment to begin July 1972 and a replacement has not been obtained. We are just beginning to see evidence that both management and individual employees have confidence in our ability to assist them with interpersonal and emotional health problems. I regret that inability to replace one of our key consultants could set our program back many years. We will barely be able to offer "crisis intervention" type of service, with little or no preventive efforts possible.

The Alcoholic Rehabilitation program continued to grow during the year, necessitating an increase from one to three group meetings, with tentative plans being made for a fourth group. At the present time 32 employees are actively involved in the program with additional individual counselling, antabuse, and psychiatric consultation as needed. All participants are expected to attend the NIH group meetings and are encouraged to attend AA groups outside. The program is coordinated by Mrs. Naoma Huckaby, our Assistant Head Nurse.

Attempts were made to inform supervisors of the availability of the program and how they could best utilize it. Individual meetings with supervisors and group meetings with employees were held for the purpose of education and understanding alcoholism as a disease. A training seminar for supervisors is being planned by the Employee Relations Branch and it is expected that continued education of supervisors and employees will promote rapid growth of the program. Statistically, one of every ten Americans has a serious drinking problem and one in five could be diagnosed as alcoholic. Based on this, the NIH population has a great need for an effective alcoholic rehabilitation program. With increased numbers of employees seeking help, more nurses and counsellors will be needed as well as leaders for group meetings.

During the year we participated in the Inter-Institute Technical Committee on Biohazards and made the following recommendations: 1) All individuals exposed to biohazards should have base-line sera banked for possible later use. 2) Individual laboratories should be permitted to obtain and store samples independently provided the EHS is notified in writing, and provided specimens are readily available to the EHS for diagnostic studies in the future. 3) Copies of results of tests performed in various laboratories of NIH should be sent to the EHS for filing in employees' records. 4) Employees with suspected occupational diseases should be referred to the EHS. 5) Periodic physical examinations of the type provided NCI-EVIF should be performed at the descretion of the EHS. The above recommendations are expected eventually to become NIH policy, at which time the EHS will also have access to a computerized central registry of hazardous agents, serum bank data, and other pertinent data on biohazards.

Health education activities continued under the direction of Mrs. Marion Young. "Your Key to Health," a new pamphlet describing EHS services was published and was well received. Employee Health participation in supervisory training was handled by Mrs. Young who also organized and completed a 14 session course on health for summer aides. In addition, bulletin board material was prepared, some of it being designed and constructed independently. An extensive literature file was maintained and numerous films were reviewed for possible presentation at our bi-monthly health education movies. Six excellent movies were presented during the year in the noon health education film series and plans are being considered for other health education projects. In view of increasing national interest in health education as a means of conserving medical care resources, we anticipate many more opportunities in the future to pursue this worthwhile program.

With support and encouragement from the Office of the Director, CC, we undertook several clinical research projects during the year. We have long recognized the potential value of the stable employee population as a clinical research resource, but have always considered ourselves primarily a service organization, and not one staffed and funded for clinical research. Our experiences with the

Vitamin C and Au Antigen studies, however, were good, and we look forward to involvements in other projects.

With the encouragement of the Director, CC, we began to utilize our unique position on the reservation to recruit and follow mormal employee volunteers for the purpose of studying the efficacy of ascorbic acid as a prophylactic and therapeutic agent for the common cold. The first double blind controlled clinical trial we have undertaken, the study proved to be both an exciting and educational experience for our staff. Although at times we felt the pressure of this extension of our commitments both in terms of space and personnel, we feel that this experience has been well worth the effort, regardless of the results of the study. In the performance of this task we have gained some expertise in initiating and conducting research studies which we hope to apply to other studies in the future. The Vitamin C study will be completed in September 1972 and final results should be available approximately two months thereafter. Even preliminary results are not available at this time since the code cannot be broken.

We were requested to coordinate a sickle cell trait and anemia detection program during the past year. With the assistance of the Office of the Director, CC, extensive plans were made to develop and execute a comprehensive screening and education program. A Steering Committee was formed, including members who were thought to represent all interested groups on campus. Much to our surprise, however, a relatively small number of employees objected strenuously to the manner in which the program was to be carried out, and they subsequently took their complaints directly to the NIH Director. Once again to our surprise, the decision was made to abandon the program and offer sickle cell screening only to those individuals who specifically requested it. We have learned much from this adventure in preventive medicine and know that we will profit from this experience in developing other programs in the future.

Under the direction of Miss Auth, our Medical Technologist, we cooperated closely with NHLI in recruiting volunteers for the Type II Hyperlipoproteinemia intervention study. Approximately 800 employees were screened in the EHS and those with elevated serum cholesterols had plasma cholesterol samples taken. Individuals selected for the study were notified by NHLI and the remaining volunteers were advised to begin Type II diet therapy and have their blood cholesterol repeated in one month. Individuals with elevated triglycerides but normal cholesterol were advised to follow Type IV diet for one month and then have tests repeated. Screening cholesterols also were performed on all pre-employment examinations; however employees may not have fasted beforehand. Elevated ones, therefore, were advised to repeat this test after a 12-hour fast. Miss Auth also participated in training programs for Nursing Department personnel in vena puncture technique and was of great help in the laboratory elements of the Vitamin C Study.

Because of commitments to other preventive medical programs throughout the year, we were unable to begin an active program of "smoking and health" education. We did however implement Secretary Richardson's position on "no smoking" in certain areas of HEW buildings by prohibiting smoking in all of the health units where no smoking signs were posted in appropriate places. Although we recognize the financial benefits which the Clinical Center Patient Emergency Fund receives

from R&W cigarette machines, we have strongly urged that consideration be given once again to the desirability of gradually removing cigarette machines from the NIH campus, preferably on a scheduled basis throughout the next several years. We began by requesting removal of the machine from the area in front of our Bldg. 10 Health Unit entrance.

ADMINISTRATIVE CONSIDERATIONS

Uncertainty arising from restricted personnel ceilings adversely affected morale in our Department. Whereas we are four individuals over our ceiling, and already are in need of a clerk-typist and a psychiatrist, we find it very discouraging to look into the future when it is likely that we will be losing several murses, either by transfer, retirement, or reassignment. We see no easy solutions to our personnel problems in the foreseeable future, except perhaps curtailment of services, or acquisition of preventive medical services on a contract basis.

Space limitations continued to concern us throughout the past year when we were involved in expanded clinical research projects, alcohol rehabilitation groups, various collaborative studies with Institute clinickans, and health education projects. Efforts were made to renovate Bldg. 10 Health Unit, but plans were discarded as being too expensive. We are still waiting for return of space, loaned on a temporary basis, adjacent to Bldg. 31 Health Unit, but were told that this space cannot be returned until NIH obtains additional rental space off of the NIH campus.

One final effort was made during the year to obtain the space at the opposite end of our corridor prior to its renovation by NIMH. Although the space has now been renovated at a cost in excess of $80,000, the space continues to remain idle, now for more than 2 months, awaiting what certainly must be interpreted as a low priority program.

Consideration was given during the year to relocating the Employee Health Service in the proposed Clinical Center Ambulatory Care Addition. A decision was made, however, that we can provide better service from our present location provided we are able to obtain the NIMH space at the opposite end of our corridor. We have had assurances from the Clinical Director, NIHH, that this particular space could be transferred to us when suitable space elsewhere in Bldg. 10 is provided to NIMH, either in the new addition or in present Clinical space.

Staff changes of note during the year include the creation of a new part-time position of Medical Technologist (Research Assistant) now occupied by Mrs. Quigley, who will assist in the development of an improved records management system and conduct of clinical research studies. She will also assist in the tuberculosis control and surveillance program, particularly that portion of the program which relates to the computer. As the NIH Biohazards Surveillance program becomes activated, she will coordinate EHS activities related to this program. Additionally, she will assist in the preparation of reports on occupational health programs and activities required by the Civil Service Commission.

We wonder at times whether or not we might have been negligent in the past by not being more aggressive in pursuing our departmental goals. Perhaps we need an "affirmative action plan" to borrow a popular phrase. Even though times are

not opportune for program expansion, we would, nevertheless, like to schedule several meetings with Clinical Center management during the next few months to explore various ways and means which might be available to continue to provide a dynamic occupational health program for NIH management and staff.

Table I
Selected Statistics
(Fiscal Year)

General	1972	1971	1970	1969
Total visits	27,680	25,560	23,629	24,432
Visits for occupational injuries and diseases	3,102	2,475	1,980	2,089
Immunizations	4,300	5,850	10,340	10,162
Pre-employment physical examinations	2,133	1,423	1,236	1,321
Laboratory examinations	30,059	16,652	14,587	16,486
Referral to personal physicians	1,121	973	1,342	1,478
Staff				
Physicians	4½	4 2/3	3	3
Nurses	11	11	11½	11½
Clerical	3 3/4	3 3/4	2	4
Laboratory	2 3/4	2	2	2

July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

CC-06
Serial No.

ENVIRONMENTAL SANITATION CONTROL DEPARTMENT

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July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

ENVIRONMENTAL SANITATION CONTROL DEPARTMENT

CC-06
Serial No.

This is the final report of the Environmental Sanitation Control Department which has been an operating program of the Clinical Center for 10 years. Effective June 30, 1972, the Development and Training Section will be dissolved. The Operations Section will continue to provide its normal services through other administrative channels.

PROGRAM GOALS - Operations Section

The goals of Operations Section during Fiscal Year 1972 were an extension of those of the previous year:

1. Provide a bacteriologically and physically safe, comfortable, and aesthetically pleasant environment within the Clinical Center for patients, staff, and visitors.

2. Provide opportunity for all employees to seek and achieve their highest potential.

3. Strive to upgrade and standardize cleaning performance in all areas.

4. Test new products and equipment to utilize most modern housekeeping practices.

5. Train all supervisors and laborers to perform economically and at a high level.

6. Participate in the selection of textiles and fabrics for draperies, furniture, wall and floor coverings which are fire safe, functional, and in keeping with interior decor of today.

7. Develop a system for objective evaluation of the housekeeping program.

PROGRAM GOALS - Development and Training Section

The goals of the Development and Training Section during FY 1972 were:

1. Provide a bacteriologically and physically safe, comfortable, and aesthetically pleasant environment within the Clinical Center for patients, staff, and visitors.

2. Test new products and equipment to utilize most modern housekeeping practices.

3. Foster cooperation of departments and institutes in the Clinical Center in the new in-depth environmental programs.

4. Update the Development and Training Section's functional statement and name to more clearly indicate its actual responsibilities and capabilities.

5. Develop a job description for a technician position in the Development and Training Section.

6. Provide assistance, support, and consultation in the promotion, coordination, and utilization of environmental health services furnished or potentially available to the Clinical Center.

7. Identify and evaluate potentially hazardous environmental conditions and urge implementation of applicable corrective measures consistent with both available resources and priority rating.

8. Conduct limited technical environmental studies consistent with available department resources.

9. Promote, implement, and coordinate increased environmental health and safety training to institutes and departments within the Clinical Center.

10. Disseminate institutional environmental health information to hospitals, government agencies, and interested individuals via oral and written channels.

PROGRESS ACHIEVED - Operations Section

In housekeeping operations the only product is quality. This is what must be measured and controlled if the objectives of a cleaning program are to be realized. Quality in cleaning is difficult to convey in terms of one's expectations of degree or standard of cleanliness. The problem is a human one involving difference of interpretation; people have different opinions as to "how clean is clean?"

The Appearance Rating System was implemented in an attempt to answer the question by removing the guess work and subjective approach to determining the level of cleanliness. The Appearance Rating System is a method by which the level of cleanliness can be measured. This system concept is not new. Many variations of it have been used over past years. The system is based on 100 possible points. These 100 points are distributed differently for different types of space depending upon their relative importance of level of cleanliness and their affect on the overall appearance of the area.

The system also takes into account the extent to which the occupants' habits of orderliness and the condition of maintenance of the area influences the overall appearance. The system is slightly modified version of the IBM "Statistical Quality Control Procedure" as presented in Professional Sanitation Management of July 1970. As developed, this rating system permits

an objective evaluation of the quality level of the entire Clinical Center housekeeping program, as well as a comparative evaluation of the quality levels being obtained by the organizational units within Operations Section.

Second revision of the Department of Environmental Sanitation Control Cleaning Procedure Manual was completed and submitted to Clinical Center Information Office for editing and printing. The manual is being printed by Government Printing Office and will be available for purchase through GPO.

Operations Section provided assistance and support for a comparative study of "Wet vs. Dry Mopping in Patient Rooms." The floor cleaning procedure in most of the Clinical Center patient care areas is to damp mop patient room floors with a germicidal detergent solution once daily during the week and to dust mop once daily on weekends using an oil-treated cotton dustmop. The study sought to determine if daily dust mopping of floors in patient rooms with disposable treated Masslinn Dust Cloths, and followed with wet mopping with a germicidal detergent once a week, would have any adverse affect on either the number of microorganisms present in the environment or the aesthetic appearance of the floor. It was felt that the use of disposable, treated dust cloths would reduce the laundry workload, be of a more uniform quality, reduce logistic problems, and minimize the possible carryover of contamination from one room to another. Final evaluation of Wet vs. Dry Mopping showed a generally unacceptable increase in bacteriological floor counts when wet mopping was eliminated more than three consecutive days in patient rooms.

Operations Section evaluated a new GSA, Type I, scouring powder. The GSA product was found satisfactory during in-use comparison with the commercial scouring powder. Environmental Sanitation Control Department participated in drawing specifications for the new powder.

Operations Section evaluated three pre-measured and packaged cleaning products. Two of the products, a floor finish and a detergent, offered no advantage over our current products. The third, a dry foam carpet shampoo material, was found to be a superior cleaning product at approximately the same cost. Pre-measured and concentrated cleaning materials showed great promise for material usage control, ease of handling, and reduced storage requirements. Product quality and cost have been the principle problems with this type of product.

Operations Section performed in-use evaluation of AirKem A-125 Dry pre-measured detergent. This product comes in 1/2 ounce water-soluble packets and is used one packet per three gallons of water. The overall evaluation was good. The product was a good, heavy-duty, low suds detergent that did not require rinsing. Packets dissolved easily in water. The A-125 had decided storage advantages; a 25-pound pail is equal to about 35 gallons of liquid general purpose detergent. The A-125 Dry also offered a slight in-use cost per gallon advantage. At a use rate of two ounces per gallon liquid general purpose detergent cost $0.0151 per gallon cleaning solution, A-125 Dry, at a use rate of one packet per three gallons, cost $0.0120 per gallon of cleaning solution. The major disadvantage of the A-125 Dry was

the requirement for making a minimum of three gallons of cleaning solution at a time which meant that it was wasteful except for mopping procedures. Also, the small size of the packet increased the possibilities of pilferage. A-125 Dry was adopted by Operations Section for use on a limited basis.

The Operations Section supervisory staff attended a demonstration of a new "steam" cleaner for carpet shampooing. The Steam Liner Mach I is a very effective cleaner with much improvement in productivity over earlier equipment of its type. The ease of operation was satisfactory, but the operator must adapt to always moving backward while using the machine.

The Hild Company demonstrated a new upholstery cleaning tool to the Operations Section. Equipment was satisfactory for general cleaning but ineffective on stains.

Operations Section supervisors and leaders attended a special demonstration workshop on operation, care, and maintenance of the "Alcazam" carpet area cleaner. The "Alcazam" carpet area cleaner was adopted by Operations Section for maintaining the rapidly increasing carpeted areas of the Clinical Center.

Two proposals for uniform changes in Operations Section were evaluated and adopted during the year. Female Housekeeping Aids use-tested two pantsuit uniforms. The selected pantsuit uniform was comfortable, attractive, easy to maintain, and well accepted by employees. Two pantsuit uniforms were authorized on a voluntary basis for each female Housekeeping Aid. The Section also tested a uniform for male elevator operators. This uniform consisted of a Mariner Blue Double Knit Gabardine blazer and slacks with medium blue short-sleeved shirt and Navy Blue Four In Hand necktie. The uniform was attractive and comfortable. The Section received many favorable comments from the general public about both of the new uniforms.

New Position descriptions were written and approved for Housekeeping Aid, WG-02, CC-695; Housekeeping Aid, WG-03, CC-694; and Elevator Operator, WG-02, CC-603. Classification approval of the journeyman housekeeping employee at the WG-03 was the decisive action that ended a fourteen month effort to avoid downgrading of housekeeping employees as a result of applying janitor-type standards under the Coordinated Federal Wage System.

Seventeen Operations Section employees received Sustained Superior Performance Awards during the year. Ten employees received Length of Service Awards totaling 140 years.

Mrs. Geraldine Howard, Housekeeping Aid, Night Service Unit, had her suggestion for a two G.I. can dolly adopted for use in the Clinical Center. The new dolly saved time and manpower in solid waste removal.

PROGRESS ACHIEVED - Development and Training Section

Administration

Significant progress on and acceptance of Development and Training Section's

approach to Clinical Center environmental control were achieved in FY 1972. Better understanding, cooperation, and communication were brought about with the Environmental Services Branch through more frequent and open discussions. Improved relationships were actively promoted and obtained from the Office of the Director for Administration, NIH, which includes Biomedical Engineering, Plant and Safety Management, Insect and Rodent Control Unit, Plant Engineering, and Engineering Design Branch.

The Nursing Department - ESC Liaison Committee continued to function smoothly. Meetings were held monthly to discuss interrelated problems and to cooperate on research activities of mutual interest.

Monthly environmental control meetings of the Health Services and Mental Health Administration were attended in the Parklawn Building, Rockville. The sessions were highly productive in that channels of communication developed which made it possible to exchange and discuss items of mutual concern in environmental control within a medical care institution.

FY 1972 was a year of exuberance and finally total defeat. Implementation of a broad in-depth environmental program started with acceptance by many groups within and without of the Clinical Center as something long overdue. However, word was received June 28, 1971 that the Development and Training Section would be abolished upon retirement of the Department Chief. Staff members were requested to search for other assignments. Consequently, the balance of the fiscal year was devoted to completing work assignments, providing assistance as requested, and finally, searching for new positions.

The resultant transfer of one staff member to Nuclear Medicine and the return of another to Operations Section seriously affected section productivity. Accomplishments were, however, significant but limited with respect to previous years.

Environmental Activity

During the fiscal year, emphasis was directed toward patient areas. Nearly 50 percent of all patient units, and all Nutrition kitchens, were surveyed. Principal efforts included food service, electrical safety, insect and rodent control, plumbing, housekeeping, microbial contamination, and general sanitation.

As an outgrowth of a physical plant inspection of building 10A, bids were let resulting in correction of the identified deficiencies.

Building plumbing continued to be investigated in order to identify additional hazardous conditions. Plans for reducing or eliminating previously found hazards continued in the Engineering Design Branch.

Animal room sanitation problems were referred to the Clinical Center Director for action by the Clinical and Scientific Directors.

Cold steam humidifiers were studied in order to reduce microbial contamination in the water reservoir during use. In response to our work, industry developed a prototype which has to date shown great potential. In-use studies have started between Inhalation Therapy, ESB, and this section to develop a standard operating procedure for these humidifiers.

A plan for environmental services that need to be furnished to the Clinical Center was prepared and routed through the Administrative Office to Environmental Services Branch for their review and possible implementation.

Significant accomplishments in electrical safety were realized. Program assistance was obtained from Biomedical Engineering and Instrumentation Branch in evaluating and updating electrically sensitive patient areas. To date, evaluations have been completed in 7-N Heart Cath Lab, 10th floor OR Suites, 6 West patient area, Nurse storeroom, Central Sterile Supply, and Laminar Flow rooms. Work has continued on correcting disclosed defects. Assistance and consultation have also been provided on training and equipment purchase.

The study on the use of dust mops in patient areas has been completed. This was a cooperative project between both sections. On the basis of test data and visual observations, it was found that this method would be a satisfactory replacement for wet mopping not to exceed three consecutive days. A significant reduction in manpower resulted from this study.

Interim specifications for both germicidal scouring powder and germicidal detergent were reviewed and written comments made to General Services Administration. Generally, section comments were included in the specifications.

PUBLIC RELATIONS - Development and Training Section

Mr. Strong, Chief, Development and Training Section continued to serve as environmental control consultant to the Pan American Health Association.

Other environmental consultation was provided Walter Reed Army Medical Center, U. S. Naval Hospital, Indian Health Service, American Hospital Association, and Army Surgeon General's office. Telephone and personal visit consultation was given to many hospitals throughout the United States and other countries.

Mr. Strong was appointed to the National Sanitation Foundation Committee charged with drawing up sanitary standards for patient care respiratory equipment. As a result three days were spent in Ann Arbor, Michigan working on these standards. Additional such sessions are planned during the next fiscal year.

Mr. Strong represented the department at the American Public Health Association meeting in Minneapolis, Minnesota.

TRAINING - Operations Section

Adult Basic Education continues to comprise a major segment of the Section's employee effort. Fiscal Year 1972 saw a 40% increase over Fiscal Year 1971 in man-hours devoted to this one program. In addition, section Wage Grade employees attended various clerical and computer courses such as Basic Typing, Introduction to Computers, FORTRAN IV, Elementary PL/1 for a total of 274 hours. As part of the effort to upgrade supervisory skills within the Section one supervisor attended the Housekeeping Management for Health Care Facilities at Michigan State University for 280 hours. Seven supervisors completed the Clinical Center Supervisory Management Course for 280 hours. One supervisor completed NIH Introduction to Supervision for 120 hours. One supervisor completed the NIH Advanced Supervision for 40 hours. Total time spent for supervisory training in Fiscal Year 1972 was approximately double each of the previous three years. Total intrasection training increased approximately 30% over the previous year. Most of this effort was devoted to training in basic and general cleaning procedures.

TRAINING - Development and Training Section

Mr. Musachio, Development and Training Section Sanitarian, and Mr. Strong each completed a 40-hour session on Supervision. Mr. Musachio then continued through an additional 40 hours of advanced supervision course. Mr. Lomax, Supervisor Trainee in Development and Training Section, attended an 80-hour training course on Basic Biology.

Mr. Strong attended a 2-day seminar at George Washington University on waste disposal.

A 3-month environmental control training session for a Venezuelan trainee was prepared by Mr. Strong. It was implemented and successfully completed in cooperation with the Veterans Administration Hospital system.

A food service training course was prepared and conducted for the Nutrition Department.

Staff members attended several 1 and 2-day electrical safety seminars.

Mr. Strong served on a committee to arrange and conduct an electrical safety training program for Clinical Center nursing staff.

Two visits were made to the Sinai Hospital in Baltimore to discuss electrical safety and observe their improvements.

Mr. Musachio attended the 35th Annual Educational Conference of the National Environmental Health Association held in Portland, Oregon.

Other staff training included:

1. Noise Seminar, National Bureau of Standards in Gaithersburg — 8 hours

2. Disinfection and Sterilization, NIH — 30 hours

3. Pest Control and Pesticides, NIH — 24 hours

4. Basic Electronics, NIH — 24 hours

PRESENTATIONS - Development and Training Section

One-hour talks on environmental control were presented in Washington, D. C. to National Executive Housekeepers Association, and also to an institutioanl food service organization.

The National Catholic Hospital Association meeting was attended in Atlantic City by Mr. Strong who presented a lecture on environmental control.

PERSONNEL - Operations Section

Operations Section personnel turnover decreased by approximately 50% during Fiscal Year 1972 compared to Fiscal Year 1971. Of the 38 employees who left the Section, 55% either transferred to positions offering improved career opportunities or returned to school. Twenty-one percent of those who left were retired with immediate annuities.

Other Items of Interest - - Employees were no longer required to sign in and out with area supervisors . . . employee pay check distribution was improved . . . area supervisors were authorized to establish "coffee messes" within their areas . . . all non-supervisory section employees were interviewed and counselled as part of the Public Health Service Careers Program . . . title of the journeyman cleaner was changed from Laborer to Hospital Housekeeping Aide . . . first line supervisors met monthly with their employees . . . employee locker room habitablity was improved with new furnishings and paint . . . unofficial office personnel folders for all employees were reviewed and outdated information removed.

PERSONNEL - Development and Training Section

The transfer of Mr. Musachio out of the section and the return of Mr. Lomax to Operations Section significantly reduced section productivity.

PROBLEMS - Operations Section

1. The Operations Section's increasing workload, continuing erosion of position ceilings, and sociologically desirable but non-productive programs combined to create a lower level of cleanliness in the Clinical Center.

2. Operations Section continued to waste man-hours because it was not notified of proposed dates for construction and renovation projects. If construction and renovation schedules had been available, work could have been planned and scheduled so no major cleaning would be done in an area that was about to be closed for construction or renovation, enabling the Section to plan intelligently for the preparation of areas for occupancy.

3. It was determined that employee locker rooms should be air conditioned.

PROBLEMS - Development and Training Section

Space

Space availability was satisfactory for the past program activity.

PLANS - Operations Section

1. Fully implement Appearance Level Program to provide an objective numerical index of cleanliness in the Clinical Center.

2. Develop, train, and activate a project unit.

3. Complete refresher training and certification in basic work procedures for all section supervisors, leaders, and employees.

4. Continue major efforts to upgrade and standardize work procedures.

5. Continue to test new products and equipment utilizing most modern housekeeping practices.

6. Coordinate the selection of textiles and fabrics for draperies, furniture, and wall and floor coverings within the Clinical Center.

7. Support and encourage upward mobility of employees so that they may work at their fullest potential.

PLANS - Development and Training Section

Effective June 30, 1972, this section will cease to exist; therefore, no plans can be formulated. In the future, environmental services coordination will be conducted from the Clinical Center Administrative Office.

TABLE 1

DEPARTMENT OF ENVIRONMENTAL SANITATION CONTROL
OPERATIONS SECTION

April 1, 1971 through March 31, 1972

Formal Training - Classroom

Government	Man-hours	
Supervision of Low Skilled Employees	40	
NIH Introduction to Supervision	120	
NIH Advanced Supervision	40	
Clinical Center Supervisory Management Course	280	
EEO Training Institute and Conference	98	
Beginning Typing	100	
Refresher Typing	40	
Seminar for Supervisors on Behavioral Problems of Employees	48	
Human Biology, Part I	80	
Human Biology, Part II	80	
Computer		
Introduction to Computers	32	
FORTRAN IV	36	
Elementry PL/1	6	
Telephone Techniques	2	
Refresher Shorthand	20	
Better English Usage	20	
Time and Attendance Lab	3	
Correspondence/TCO Procedures	3	
Travel Procedures	3	
Filing Procedures	3	
Basic Adult Education	2,554	
TOTAL		3,608

Seminars and Lectures

Non-Government		
Solid Waste Management for Hospitals	16	
Housekeeping Management for Health Care Facilities	280	
National Environmental Sanitation and Maintenance Conference	32	
TOTAL		328

TABLE 1 (Cont.)

Within the Department (O.S.)	Man-hours	
Orientation	9	
Procedures	3,834	
Supervisory Training	220	
All Employee Training	852	
TOTAL		4,915
GRAND TOTAL		8,851

TABLE 2

POSITIONS FILLED BY RECRUITMENT

DEPARTMENT OF ENVIRONMENTAL SANITATION CONTROL
OPERATIONS SECTION

April 1, 1971 through March 31, 1972

MONTH	WG-4 and Above	WG-3	WG-2	WG-1	GS-2 and Above	TOTAL
April						0
May				1		1
June			6	7*	2	15*
July			3			3
August						0
September						0
October						0
November			6			6
December			4			4
January			5		1	6
February			2			2
March						0
TOTAL			26	8*	3	37*

*Six summer aids not included

TABLE 3

NUMBER OF SEPARATIONS, RESIGNATIONS, ETC., BY MONTH & GRADE

DEPARTMENT OF ENVIRONMENTAL SANITATION CONTROL
OPERATIONS SECTION

April 1, 1971 through March 31, 1972

MONTH	WG-4 and Above	WG-3	WG-2	WG-1	GS-2 and Above	TOTAL
April		1		2		3
May		4	1	1		6
June		2	1	3		6
July	1					1
August		1		*	1	2*
September		2	3	2*		7*
October			2	1		3
November			2	1		3
December		2				2
January		1			2	3
February		1	1			2
March						0
TOTAL	1	14	10	10*	3	38*

*Six summer aids are not included

TABLE 4

REASONS FOR PERSONNEL LEAVING

DEPARTMENT OF ENVIRONMENTAL SANITATION CONTROL
OPERATIONS SECTION

April 1, 1971 through March 31, 1972

RESIGNATIONS	TRANSFERS	RETIREMENTS	TERMINATIONS	DECEASED
Resigned when faced with possible disciplinary action 1	Improved career opportunities 12	Retirement disability 3	Failure to report to duty 1	
To accept non-government position 2	Monday thru Friday 2	Retirement optional 5	Expiration of temporary appointment 3	
To return to school 5	Better chance for promotion 2		Separation during probationary period 2	
SUB-TOTALS 8	16	8	6	

TOTAL - 38

CHART I

ENVIRONMENTAL SANITATION CONTROL DEPARTMENT

OPERATIONS SECTION

POSITIONS FILLED BY THE MONTH

April 1, 1971 through March 31, 1972

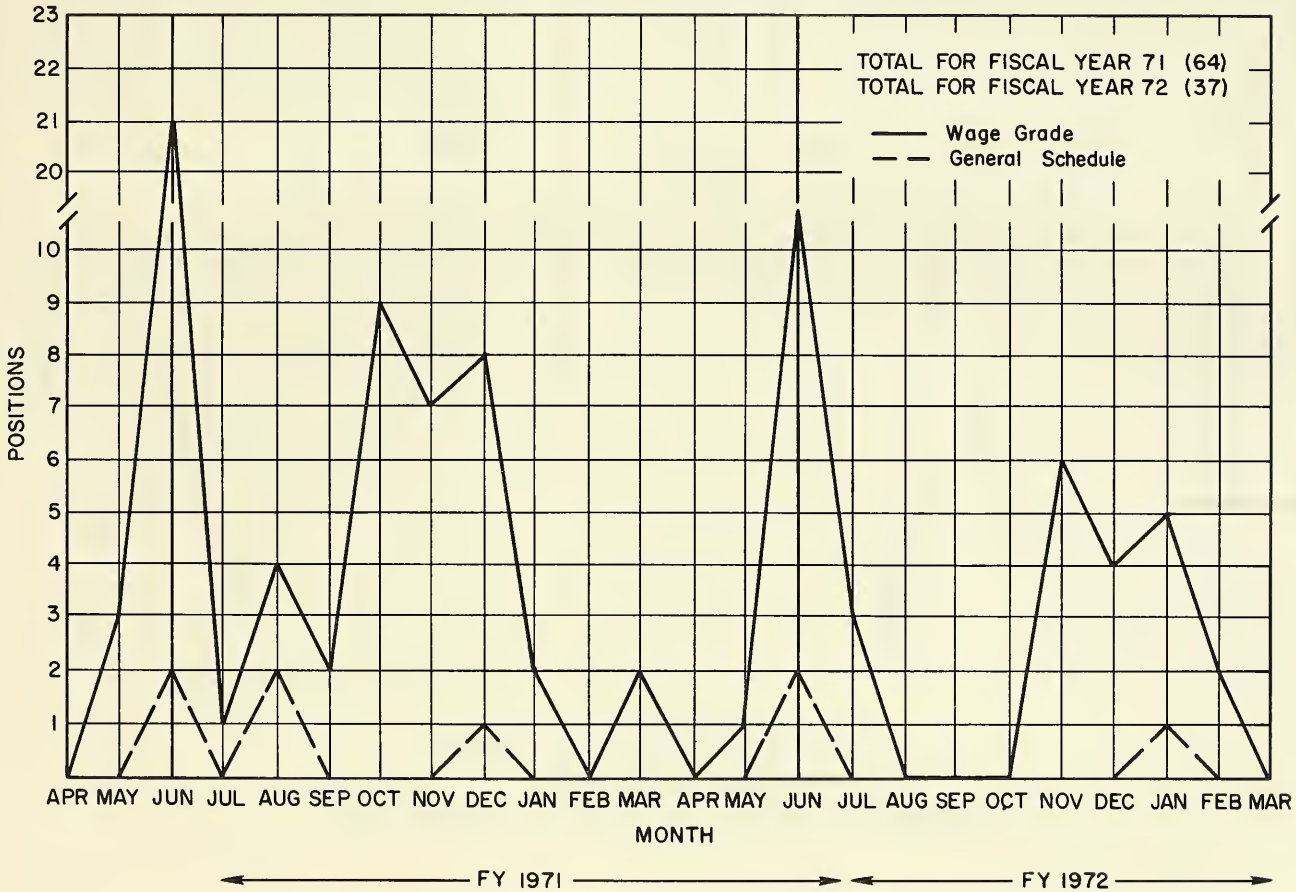


CHART 2

ENVIRONMENTAL SANITATION CONTROL DEPARTMENT

OPERATIONS SECTION

NUMBER OF SEPARATIONS BY MONTH

April 1, 1971 through March 31, 1972

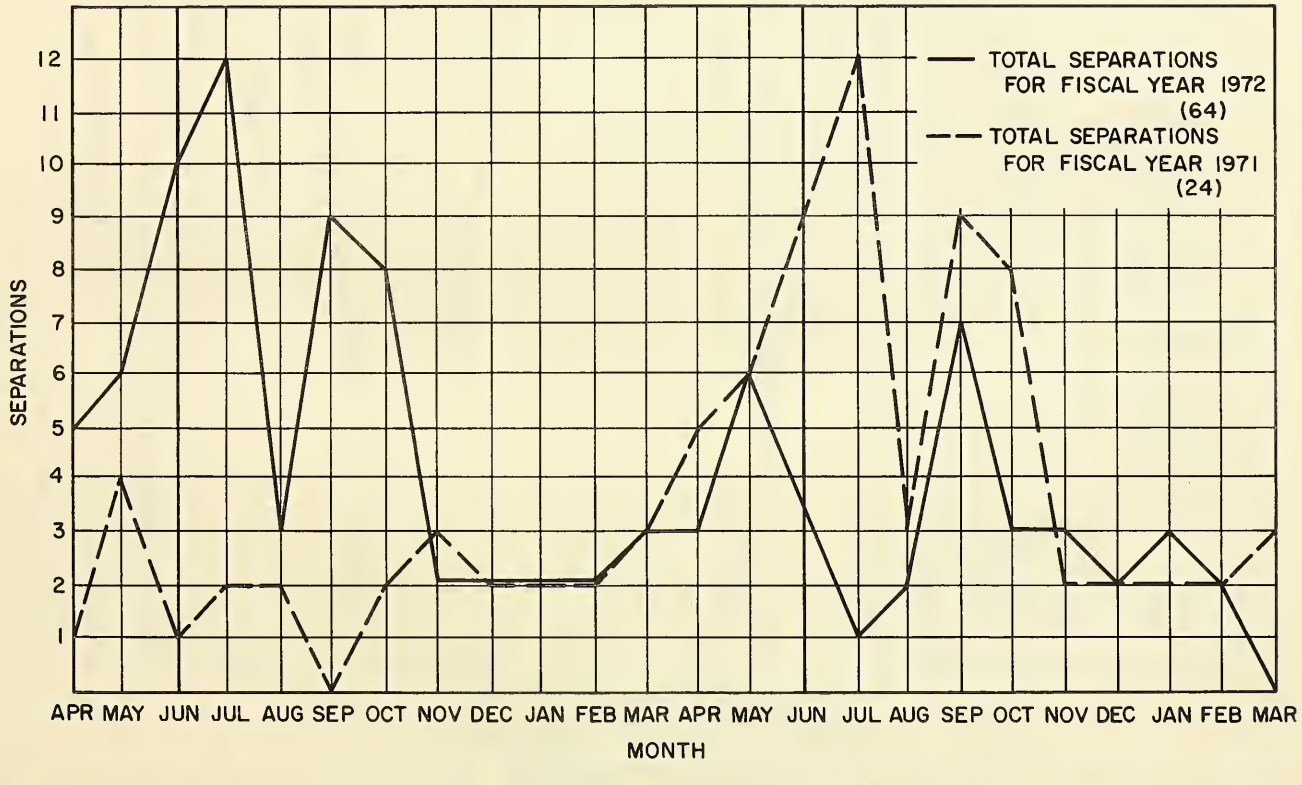
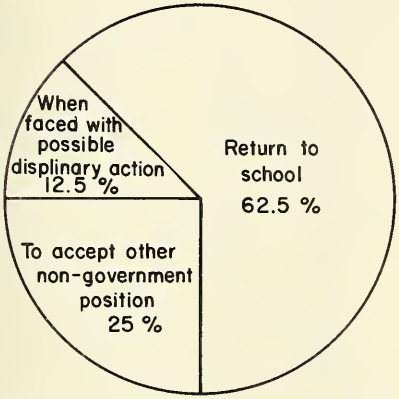
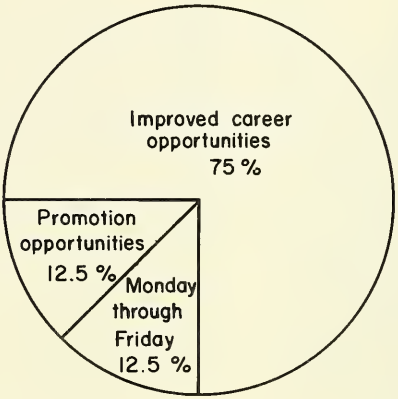


CHART 3
ENVIRONMENTAL SANITATION CONTROL DEPARTMENT
OPERATIONS SECTION
REASONS FOR PERSONNEL LEAVING
April 1, 1971 through March 31, 1972

RESIGNATIONS-8



TRANSFERS-16



OTHER SEPARATIONS-14

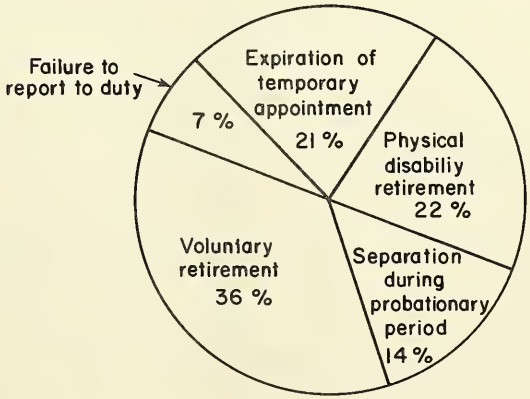
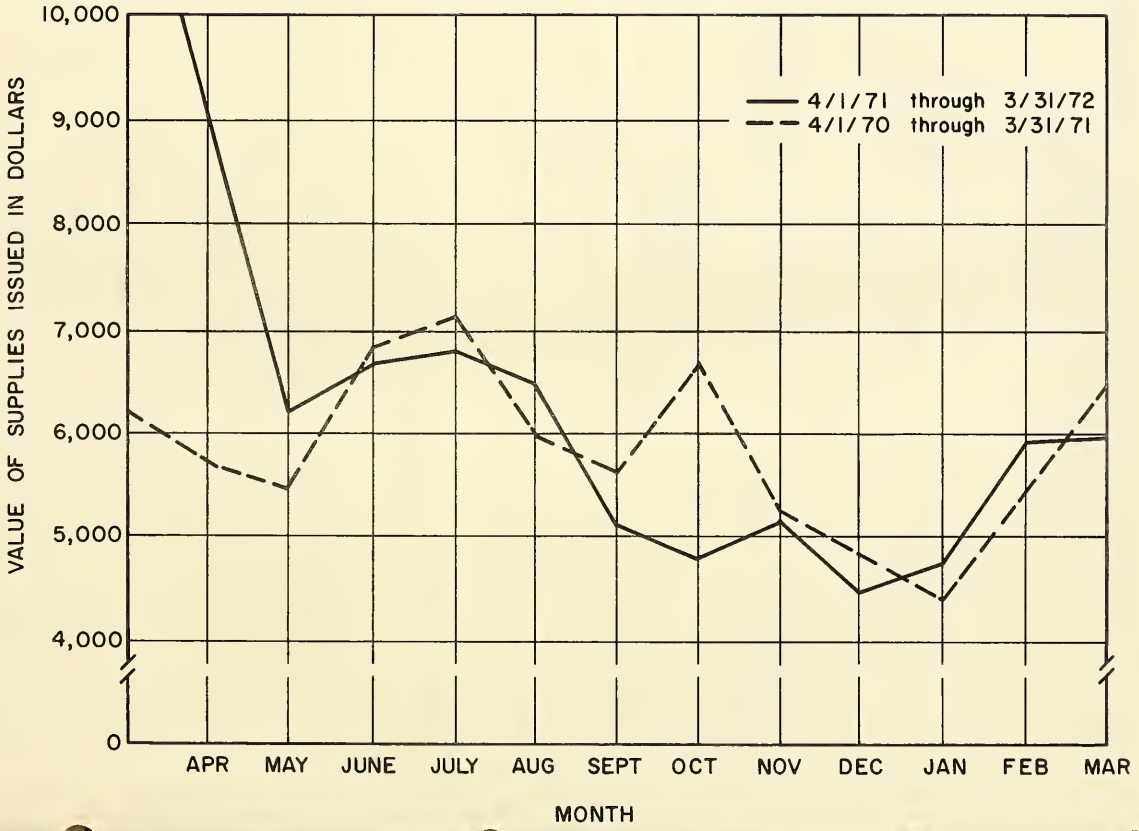

Failure to report to duty 7 %
Expiration of temporary appointment 21 %
Physical disabiliy retirement 22 %
Voluntary retirement 36 %
Separation during probationary period 14 %

CHART 4
ENVIRONMENTAL SANITATION CONTROL DEPARTMENT
OPERATIONS SECTION
VALUE OF SUPPLIES ISSUED BY MONTH
April 1, 1971 through March 31, 1972



July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

MEDICAL RECORD DEPARTMENT

CC-27
Serial No.

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PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

MEDICAL RECORD DEPARTMENT

CC-27
Serial No.

OBJECTIVES

The Medical Record Department provides a medical record for every registered Clinical Center patient; the prime objective is to insure that each medical record is complete, accurate, safeguarded, and available to authorized personnel. To this end, systems are maintained which provide: (1) an accounting of each registered Clinical Center patient; (2) immediate access to and release of medical records and information to authorized users; (3) a computerized listing of each patient by diagnosis and operation; (4) an analysis by Institute and Branch of discharged inpatients; (5) patient care statistical data compilations; (6) a systematic arrangement of reports within the medical record; (7) a record of dictation received and transcribed medical reports dispatched.

MAJOR PROGRESS

Education and Training

Orientation of new employees from this and other Clinical Center departments and from the Institutes was accomplished. Lecture tours continued to be given to Public Health Service student medical record administrators and other visitors to the Clinical Center.

Key personnel attended classes, seminars, and meetings on subjects relating to medical record systems and procedures, data processing, office equipment, medical subjects, supervision, and equal employment opportunity. Of particular note is the fact that all but one supervisor completed the Civil Service Commission 80-hour requirement for supervisory training.

Employees were enrolled in Better English Usage classes, Clerk-Typist courses, and Adult Education classes working toward high school diplomas.

Regular employee discussions were begun for all day and night staff members in addition to regular Section Head Staff Meetings.

Two employees successfully completed the American Medical Record Association Correspondence Course for medical record technicians, passed the national examination, and were certified as Accredited Record Technicians.

Personnel

The average number of employees on duty from July 1971 through June 1972 was 53; of this number an average of 12 served on a part-time basis.

The full-time ceiling for the Medical Record Department was reduced from 43 to 40 during this reportable period.

DEPARTMENTAL ACTIVITIES

The Medical Record Department continued to maintain and improve the standards of service it rendered to the Clinical Center in particular and to the National Institutes of Health in general. Therefore, it was necessary to estimate, appraise, and execute systems and procedures and, concurrently, maintain an adequately trained staff to program regular services.

The Transcribing Section was remodeled by an office landscaper to eliminate and/or minimize the noise pollution factor.

The revised Special Ambulatory Care Program policy and procedures became effective for the National Cancer Institute on January 18, 1972, and for the National Eye Institute on January 26, 1972. Although these represented a major improvement in past policy, additional work needs to be done to bring them into closer alignment with actual practice.

A seven-digit hospital number was issued to all newly registered patients effective March 1, 1972. Effective April 19, 1972, all patients admitted to the Clinical Center through the Admitting Office will be issued 7-digit patient registry numbers. Studies have shown that use of seven-digit numbers increases the degree of accuracy and ease of manipulating patient data.

A Restatement Policy on Access to Medical Reports and Information was written by the Medical Record Department and approved by the Executive Office.

A new procedure for establishing and maintaining control of delinquent medical report dictation using a Magnetic Tape Selectric Typewriter was implemented. This was done in accordance with a recommendation of the Medical Record Committee.

MAJOR PROBLEMS

Hospital statistics were microfilmed by the Federal Records Center in order to conserve space. The work was not satisfactory and arrangements were made to have some of this information, such as, the statistics of patient registration and identification, available via computer.

PROPOSED FUTURE OBJECTIVES

These include:

(a) Installation of a mobile storage unit to house medical records in the overflow area,

(b) Completion of the Computer Coding and Retrieval Project,

(c) Investigation and installation of an automatic track system to transport medical records among the Medical Record Department, Clinics, and Admissions areas.

TABLE 1

STATISTICS FOR THE TRANSCRIBING SECTION

	July 1, 1971 March 31, 1972	April, May & June 1971	TOTAL
Belts & discs received	7,533	2,471	10,004
Belts & discs transcribed	7,560	2,431	9,991
Material transcribed (pages)	20,012	6,519 1/4	26,531 1/4

	1 FY 1971	2 FY 1972	3 Percentage + or -
Belts & discs received	9,935	10,004	+.694%
Belts & discs transcribed	9,962	9,991	+.291%
Material transcribed (pages)	34,007	26,531 1/4	- 21.9%
Remaining work	56	29*	- 48.2%

April, May and June, 1972 are projected statistics based on actual figures from April, May and June, 1971.

*Belts and discs remaining as of 3-31-72

TABLE 2

PATIENT CARE STATISTICS

First Registration

Inpatients	1,204
Follow-up patients	2,707
Walk-in	1
Emergency	21

Patient Care Statistics

Total number of admissions	4,516
Total number of discharges (includes 169 deaths)	4,553
Total number of deaths	169
Percentage of deaths	4
Total number of autopsies	154
Percentage of autopsies	91
Available bed days	188,856
Total inpatient days	114,499
Average daily census	313
Percentage of bed occupancy	61
Discharged patient days	114,309
Average length of stay	25
Total number of patients admitted to the Clinical Center from 6 July 1953 through 30 June 1972	67,186

These are projected figures estimated for the final quarter.

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

DEPARTMENT OF NUCLEAR MEDICINE

CC-66
Serial No.

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July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

DEPARTMENT OF NUCLEAR MEDICINE

CC-
Serial No.

Office of the Chief

Gerald S. Johnston, M.D., Chief, (Chairman, Radiation Committee)
Alfred E. Jones, M.D., Assistant Chief, (Chief, Diagnostic Nuclear Medicine Section)
Roger L. Aamodt, Ph.D., Chief, Whole Body Counter Section
Joseph M. Brown, Jr., B.S., Chief, Radiation Safety Section
Raymond J. Farkas, B.S., (Pharmacist), Chief, Radiopharmacy Section
Michael V. Green, M.S., Nuclear Physicist
Raymond E. Murphy, Nuclear Electronics Instrumentation Technician
Luella Bentz, Secretary

Review of Departmental Changes FY 1972

a. Personnel:

	Position	Arrival
Gerald S. Johnston, M.D.	Chief	July 1, 1971
Alfred E. Jones, M.D.	Assistant Chief	July 1, 1971
Michael S. Milder, M.D.	Clinical Associate	July 1, 1971
Robert J. Kramer, M.D.	Clinical Associate	July 1, 1971
Michael V. Green	Nuclear Physicist	July 1, 1971
Sybil J. Swann	Nuclear Medical Technician	July 1, 1971
Cathy S. Yarrison	Secretary	July 1, 1971
Paula K. McPherson	Secretary	August 1, 1971
Roger L. Aamodt, Ph.D.	Chief, Whole Body Counter	September 1, 1971
Camille L. Boyce	Nuclear Medical Technician	August 1, 1971

Five of the above personnel were replacements for persons who had left the Department in the preceding twelve months.

b. Equipment:

Radiation Safety expanded its underground isotope retention tank as well as the loading dock at Building 21.

The Diagnostic Nuclear Medicine Section received two new radionuclide imaging devices as well as increased space and remodeling of the area in Building 10, first floor B wing.

c. Acquisition of Radiopharmaceutical Section:

Radiopharmacy was transferred from the Pharmacy Department to the Department of Nuclear Medicine in February 1972.

d. Cooperative Radiopharmaceutical Program:

A cooperative Radiopharmaceutical program is under development with the Division of Applied Sciences, Brookhaven National Laboratory. Radiochemists at Brookhaven are providing expert advice and aid to the Radiopharmaceutical Section of the Department of Nuclear Medicine. It is expected that, as this program develops, present radiopharmaceutical methods will be improved, and new diagnostic radionuclide compounds will be developed.

e. Whole Body Counter Section:

The new head of this Section, Dr. Roger L. Aamodt, has reorganized this Section so that it has increased its research productivity as well as its role in monitoring NIH personnel who are working with radionuclides.

f. Dr. Gerald S. Johnston, Chief, Department of Nuclear Medicine, was appointed Chairman of the Radiation Committee in August 1971 and nominated and approved as a member of the Medical Board, Clinical Center, National Institutes of Health, for the calendar year 1972.

During fiscal year 1972 the Department provided increased clinical service, continued with new research effort, and taught NIH staff the principles required in the safe and productive utilization of radionuclides in research.

The Department has sought to provide new clinical research techniques by improving the clinical tests available as well as developing new diagnostic methods with new radionuclides. There are two new radionuclides, ^{67}gallium citrate for localization of neoplasia and ^{18}fluorine for studying the integrity of the entire skeleton in patients with cancer.

The number of studies performed in the Diagnostic Nuclear Medicine Section increased 24% in fiscal year 1972 compared with fiscal year 1971. The complexity of the studies and information provided by them is increasing as well each year.

The Whole Body Counter Section in the last half of the fiscal year 1972 performed enough studies to raise its output by 46% over fiscal year 1971.

Radiopharmacy Section experienced a 22% increase in services provided during fiscal year 1972. Most of the increase was realized from service rendered to the Department of Nuclear Medicine.

As predicted in the annual report of fiscal year 1971, the Department of Nuclear Medicine has experienced a great change during the fiscal year 1972. It is believed that continuing change will be necessary not only to maintain the progress that has been made but also to build a Department that will be a leader in the field of Nuclear Medicine.

DIAGNOSTIC NUCLEAR MEDICINE SECTION

General:

Personnel: April 1972

Alfred E. Jones, M.D.	Chief
Steven M. Larson, M.D.	Clinical Associate
Robert J. Kramer, M.D.	Clinical Associate
Michael S. Milder, M.D.	Clinical Associate
Camille L. Boyce	Nuclear Medical Technician
Jeanne Honicker	Nuclear Medical Technician
Felbert G. Lamb	Nuclear Medical Technician
Sybil J. Swann	Nuclear Medical Technician
Cathy Yarrison	Secretary
Paula McPherson	Clerk-Typist

Dr. Johnston and Dr. Jones arrived in July 1971 along with Sybil Swann and Cathy Yarrison. Kathleen Henderson, Nuclear Medicine Technician, left this Section in July 1971 and was replaced by Camille L. Boyce in August 1971. Camille Boyce and Sybil Swann are registered nuclear medicine technicians who had more than four years of training and experience in this field.

Cathy Yarrison is a graduate of Maryland Medical Secretarial School and had had over two years of experience associated with nuclear medicine at Walter Reed General Hospital. She arrived at NIH in July 1971 to replace Becky Miller who left the Department in June 1971.

Paula McPherson joined the Diagnostic Section in August 1971 to provide the much needed organization of patient studies, appointments, and test data. Previously the technical staff had arranged appointments with patients and had scheduled the required tests.

There was an increase of one nuclear medicine technician in 1971 with the result that there are now four technicians in the Diagnostic Nuclear Medicine Section. These technicians rotate assignments with the two nurses assigned to the Whole Body Counter Section. Assignments are differentiated by the specific electronic device which the technician is operating for the study of patients. Usually one technician is required for each imaging device. Every two weeks each technician is placed in charge of a different instrument so that all of them will maintain their skill levels with all devices.

The technical staff has been encouraged to investigate and develop improved imaging techniques and to present their experiences at regional nuclear medicine technical meetings. The technicians have been especially active in their support of their own technical society and have thereby enhanced the status of this Department in the medical technician community.

Dr. Steven Larson will complete his duties as Clinical Associate in June 1972 and will join Dr. Henry Wagner's nuclear medicine staff at John Hopkins University.

Equipment and Diagnostic Services

The arrival of an Ohio-Nuclear dual probe 5-inch crystal whole body scanner in September 1970 made it possible for this Section to perform whole body skeletal scans for the first time. The whole body scan requires approximately 90 minutes and is used primarily for the localization of bony metastases.

There are now two whole body dual probe scanners in the Diagnostic Nuclear Medicine Section. Each of these scanners has the capability of performing a whole body image of the skeletal system or a whole body survey image for sites of neoplasia. The second Ohio-Nuclear dual probe whole body scanner arrived in August 1971 and has supported cooperative projects with the National Cancer Institute and National Institute of Neurological Diseases and Stroke.

The whole body scanner proved to be ideal for studying patients with cancer after ^{67}gallium citrate had been administered. This radioactive compound has been shown to have an affinity for neoplastic tissue allowing whole body scanning surveys of patients with neoplastic disease in order to demonstrate previously unsuspected metastases.

There are two new radionuclides that are used to obtain whole body scans. The first is ^{67}gallium citrate, which detects occult neoplasia and is currently being evaluated for its success in this role. Over 260 patients have been surveyed with ^{67}gallium in FY 1972. The second agent is ^{18}fluorine, which is used for whole body bone scanning.

A third gamma camera arrived in April 1972. The first gamma camera was installed in the Diagnostic Nuclear Medicine Section in 1967 and is still in use although its efficiency and ultimate diagnostic reliability is limited when compared to the newer gamma cameras. The second gamma camera was delivered in June 1971 and has proven to be very reliable and indispensable for successful dynamic radionuclide studies.

A cooperative computer-gamma camera study was initiated with DCRT in 1971 and is still under way. In April 1972 a Hewlett-Packard 2100 computer was installed by DCRT in the Diagnostic Nuclear Medicine Section and will be used to develop new dynamic studies with the gamma camera. Such studies will include organ blood flow, pulmonary ventilatory measurements, and possibly renal blood flow and excretory function.

The Diagnostic Nuclear Medicine Section has received excellent cooperation from the Radiopharmacy Section in the production, ordering, and delivery of routine and special diagnostic radionuclide compounds. Plans are under way to enhance this cooperative effort between the sections through the Department of Applied Sciences, Brookhaven National Laboratory, whose personnel will provide instruction and advice to members of the Radiopharmacy Section.

The Diagnostic Nuclear Medicine Section received additional space in September 1971 when the Department of Nursing vacated its area on the first floor of the B wing in Building 10. Subsequently, the newly acquired area was remodeled to provide office space, patient reception and waiting area and a conference room. This has permitted more efficient use of space for the study of patients.

This section of the Department of Nuclear Medicine has enjoyed the cooperative development of new types of nuclear medicine patient studies with members from the various Institutes. New applications of radionuclides for diagnosis and investigation of disease processes have been developed with NCI, NHLI, and NINDS. Efforts are being made to improve interaction with other institutes.

See Tables I-III, pp. 29-32

WHOLE BODY COUNTER SECTION

Personnel

Roger L. Aamodt, Ph.D.	Section Chief (Biologist-Radiobiologist)
Warren F. Rumble	Guest Worker
Eleanor J. Myers	Whole Body Counter Nurse
Katherine S. Davis	Whole Body Counter Nurse

General:

During the first quarter of the fiscal year 1972, the Whole Body Counter Section continued to be operated by Eleanor June Myers and Katherine S. Davis, Clinical Nurses. The major emphasis of the Section during this period was personnel monitoring (69.4% of whole body counts). Relatively few metabolism studies were made, and nearly all of these were I-131 retention studies. A small number of potassium determinations based on K-40 total body measurements comprised the remainder of the workload of the Section.

Current Research:

In September 1971, Roger L. Aamodt, Ph.D., became Chief of the Whole Body Counter Section. During the second quarter of the fiscal year, a thorough review was made of the condition of equipment in the Section and of operating procedures of the Section. In addition, the Section began to investigate the possibility of increasing the number of medically oriented studies being performed. This resulted in the initiation of several new studies. These included: A preliminary series of studies of the retention of Ga-67, carried out in cooperation with Dr. James Arseneau of the Medicine Branch of the National Cancer Institute; studies of the uptake and retention of ingested Zn-65 in patients with zinc malabsorption syndrome, hypogeusia,

and other clinical conditions which result in decreased tissue zinc concentrations, carried out in cooperation with Dr. Robert Henkin of the Experimental Therapeutics Branch of the National Heart and Lung Institute; studies of zinc-65 metabolism in patients with porphyria, carried out in cooperation with Dr. Joel Levine of the Metabolism Branch of the National Cancer Institute; and studies of the metabolism of Cu-67 and Zn-65 in patients with Wilson's disease, carried out in cooperation with Dr. Sean O'Reilly, Department of Neurology, George Washington University and with the Medical Neurology Branch of the National Institute of Neurological Diseases and Stroke. The addition of these studies led to an abrupt increase in the number of medical whole body measurements being handled by the Section. This is illustrated in the following table.

QUARTER	1	2	3	4
% RESEARCH MEASUREMENTS	30.6	64.3	67.0	74*
% PERSONNEL MONITORING	69.4	35.7	33.0	26*

*Fourth quarter estimated from previous quarters plus increases already scheduled.

The decrease in the relative ratio of personnel monitoring to total whole body counts represents increased research counts. There has been no significant change in the number of personnel monitoring measurements to date. We anticipate a slight increase in the personnel monitoring work load when we begin counting a small number of employees of the Radiation Office, Division of Research of the Environmental Protection Agency.

Summary of Procedures:

A summary of the work load of the Whole Body Counter Section is shown in the following tables.

COMPARISON OF WHOLE BODY MEASUREMENTS FOR FISCAL YEAR 1971 and 1972

ISOTOPE ANALYSED	FY 1971		FY 1972*
P-32	15		7
Cr-51	20		24
K-40	78		40
I-125	170		136
I-131 (includes retention)	394		504
Zn-65	0		245
Ga-67	0		83
Cu-67	0		77
Fe-59	0		4
Co-60	0		4
TOTAL	677		1124
Body Burden	206		172
TOTA ALL COUNTS	883	(46% increase)	1296

*Fiscal year 1972 values estimated from first three quarters plus scheduled increases.

The Whole Body Counter Section continued to perform plasma T-3 determinations. An estimated 2100 measurements will be carried out in fiscal year 1972, if we continue at our present rate. T-3 determinations are included in the table below. The Whole Body Counter Section has initiated measurements of Zn-65 and Cu-67 in blood, stool, and urine samples from patients participating in metabolic studies. Because of the importance of accurate calibration and consistency with the whole body measurements, we felt that it was necessary to carry out these analyses ourselves. A table of the number of analyses, other than whole body counts, is shown below.

OTHER ANALYSES

QUARTER	1	2	3	4
T-3 DETERMINATIONS	439	472	670	519*
Zn-65				
URINE	0	0	140	108*
STOOL	0	0	30	86*
Cu-67				
URINE	0	0	0	28*
STOOL	0	0	0	28*
Zn-65 & Cu-67				
BLOOD	0	0	15	160*

*Fiscal year 1972 values estimated from first three quarters plus scheduled increases.

In order to train all the technicians in the Nuclear Medicine Department to operate the systems of the whole body counter facility, a schedule of two weeks rotation through the Whole Body Counter Section was initiated on June 10, 1972. At the same time, Katherine Davis and Eleanor June Myers were moved to the Nuclear Medicine Section for reciprocal training. This program has resulted in an increase in the competency of all personnel to handle problems in both sections.

In January Mr. Warren F. Rumble, of George Washington University, became a guest worker in the Whole Body Counter Section in order to take part in the study of copper and zinc metabolism in patients with Wilson's disease. Mr. Rumble has played a large role in the training activities and studies of the Section as well as in the Wilson's disease study.

RADIOPHARMACEUTICAL SECTION

General

The Radiopharmaceutical Section maintained its major areas of responsibilities: service and quality control. The function of service consisted in the formulation and development of radiopharmaceutical products for use in Clinical Center patients. The function of quality control was exercised in some manner on all radiopharmaceuticals and radiochemicals received and intended for human use.

The Radiopharmaceutical Service was transferred from the Pharmacy Department to the Department of Nuclear Medicine on January 31, 1972, and operated as a section of the Department of Nuclear Medicine for the remainder of FY 1972.

Personnel

The personnel complement remained the same. There were three professional personnel and two supporting staff which included a pharmacy technician and a clerk-typist, the latter of which in March was utilized by both the Diagnostic Nuclear Medicine Section and the Radiopharmaceutical Section. In September 1971 the pharmacy technician was accepted in the NIH Upward Mobility Program. From three to six credit hours were taken per quarter which meant that an allotment of time was given her for release from work.

The workday for one of the pharmacists continued to commence at 7:30 a.m. to enable early arrival of routinely formulated products to the Diagnostic Nuclear Medicine Section.

Summary of Procedures

The Section's locale in Building 21 continued to be very suitable as a work area and complaints from clinical investigators regarding the transport of material to and from Building 21 seemed to diminish.

An area in Room 145 was allotted for the set-up and elution of the ^{99}Mo-^{99m}Tc generator and the storage of vials and stoppers. The chemistry hood of Room 145 was also utilized for the preparation and purification of sodium ^{18}fluorine.

a. Radiopharmaceutical Section Statistical Data

	FY 1971	FY 1972	% Change
Requests Processed	1,534	1,700	+11%
Work-Units	12,376	15,000	+22%
Quality Control Requests	1,016	1,080	+ 6%
Service and Research Requests	518	620	+19%
Diagnostic Radioisotope Requests	1,130	1,440	+27%
Institute Requests	404	360	-10%
Pyrogen Tests	146	176	+20%
Sterility Tests	636	792	+24%
Radiopharmaceutical Purchases	$44,043.65	$78,000.00	+77%

Note: All Fy 1972 figures are estimated as a projected final figure based on statistics available through March 1972.

b. Major Problems, Changes, and Improvements

Comments with reference to the above statistics:

An 11% in the number of requests processed was anticipated due to the increased staff of the Diagnostic Nuclear Medicine Section which the Radiopharmaceutical Section services. This increase is reflected in its entirety to requests processed specifically for the Diagnostic Nuclear Medicine Section. The 22% increase in work-units is commensurate to what can be expected with the additional requests processed. Approximately nine work-units was the average per request processed. Work-units express the number of quality control efforts performed on each product and the number of vials dispensed.

An expected increase in work load if proportional to the current trend and that projected for the future requires additional personnel. To meet this need, an additional radiopharmacy technician position has been proposed.

The significant increase in drug expenditures is attributed essentially to the increased or new procurement of four radionuclides in particular (^{99m}Tc, ^{67}Ga, ^{18}F, and ^{43}K) which compromise over 50% of current radiopharmaceutical expenditures.

Accomplishments

Served as preceptor for a graduate residency program of a student in Radiopharmacy, Lawrence E. Gustafson, at the University of Southern California from June 14 through August 31.

Trained a pharmacist, Sten Ove Nilsson, on a guest worker assignment from Caroline Hospital, Stockholm, Sweden, from November 15 through December 10.

Supervised a two-week visit and training period for a pharmacist, Richard Kowalsky, a graduate student at the University of Kentucky from May 22 through June 2.

Jointly collaborated with the Diagnostic Nuclear Medicine Section in the purchasing, quality control, and formulation of radionuclides not previously used by the Nuclear Medicine Department, i.e., ^{67}Ga, ^{18}F, ^{43}K, ^{67}Cu, and ^{65}Zn. Bench work also involved a significant amount of time in the formulation of an electrolytic method for the preparation of human serum albumin ^{99m}Tc, a ^{99m}Technetium sulfur colloid preparation specific for lymphangiography and ^{99m}Tc red blood cells which for the most part were limited to in vitro quality control and animal testing.

Proposed Future Objectives

Jointly conduct research projects with the Diagnostic Nuclear Medicine Section on formulated products requiring development and in vivo testing. This will be possible with the proposed collaborative effort with Brookhaven National Laboratories. The work will require the Radiopharmaceutical

Section's involvement with Brookhaven to determine the possibility of labeling various molecules of potential biological interest, with radionuclides designed to the requirements of the Department of Nuclear Medicine's program. Agents appearing to have promise will be developed in detail with thorough evaluation. The development of new radionuclides and their introduction to medical applications are expected to result.

RADIATION SAFETY SECTION

General

The Radiation Safety Operation, NIH, continued to function as a section of the Department of Nuclear Medicine, Clinical Center. Early in the year the newly appointed Chief of the Department was named Chairman of the Radiation Committee and a smooth transition from the former Acting Chairman took place. The Safety Operation continued to receive the excellent support of the new Committee Chairman and members.

Notable increase in the demands on the Section were met in spite of the loss of one professional Health Physicist earlier in the year. The major increases in operation were a result of increased ordering activity under the various licenses and the elimination of most of the tracer laboratory sewer waste disposal exceptions as listed in the Radiation Safety Guide. This latter change was necessary when it became impossible to generate a meaningful record of an annual sewer disposal load when so many laboratories were discharging small but significant amounts (of radioactive waste) to the NIH sewer system. Efforts were made to further streamline TCO isotope purchases by the addition of two telephone lines for this purpose and by requesting that licensed users limit TCO calls to the hours 10 a.m. to 3 p.m.

Since the Broad License is subject to renewal in early 1973, a thorough Compliance Division inspection by the Division of Compliance was held April 27-28, 1972.

The loss of a Commissioned Officer staff member to DCRT early in the fiscal year resulted in the termination of the implementation of an integrated computerized records system for the Section. The Deputy Radiation Safety Officer assumed the primary responsibility for other computerized records and was assisted by a second staff member having previous computer training.

The manuscript for the first draft of the new revised NIH Radiation Safety Guide was submitted to a consulting editor and, in turn, to the Radiation Committee for review, comment, and approval. The consulting editor was employed by the Office of the Director on the recommendation of the Coordinating Safety Council to develop an integrated Safety Series for the NIH. It is expected that the revised guide can be completed early in the next fiscal year and submitted to the AEC in support of the Broad License renewal.

Personnel

The Section continued to utilize the services of three part-time employees, one Clerk Typist, one Electronic Technician and one Health Physics Technician. Employee overtime continued to be a necessity and, in fact, had to be increased. Overall personnel grades remain the same as the previous fiscal year. At the direction of Management, personnel training was increased resulting in the following:

- Three Health Physicists and one senior clerk completed Personnel Management courses.
- One Wage Grade employee was enrolled in the Adult Education Program.
- One clerk was enrolled in the Upward Mobility College, FCC.
- Two additional clerical staff members completed three short-term training courses to upgrade their skills.
- One Health Physicist completed the course in Report Writing offered by the Office of Training and Employee Development, OPM.
- A Health Physicist completed a 1-week course given by the American Association of Physicists in Medicine, "Physical Aspects of Diagnostic Radiology," and a refresher course in preparation for professional certification.

Facilities

The addition of the loading platform extension and the second underground isotope retention tank was completed. However, problems continued to exist with the valve system on the new retention tank. It is almost physically impossible for one man to open and close the valves.

This was the second year's use of the new addition to Building 21. Faulty tile in the second floor womens' room had to be replaced. Even though temperature control in the addition was markedly improved, the problems of humidity control have not been solved. On numerous occasions window sills have been covered over by humidity condensate. Plans are under way to install a control system to automatically operate the water sprays in the intake plenum and thereby eliminate the problem.

There was a marked increase in the use of the Isotope Laboratory facilities by NIH investigators over the year. This resulted primarily from encouragement of use by Health Physics staff members, and the establishment of a protein labeling laboratory. Fourteen investigators are currently using the labeling facility for the iodination of proteins on a regular basis, and six additional users are expected before the end of the year. During the year activities in excess of 60,000 mCi (total) have been utilized in the Isotope Laboratory. For most experiments less than 10% of the activity

manipulated was removed for further research use. Scheduling of the laboratory and classroom areas in the new addition is such that these areas are now being used almost daily throughout the week.

Licenses

The Waste Disposal License 19-00296-11 was rewritten, submitted through channels, and renewed.

License 19-00296-12 (500 Ci ^{60}Co irradiator) was amended so that the irradiator could be reloaded by a contractor. Design problems and problems with previous contamination were resolved.

Assistance was given on the preparation of a new license 19-00296-17 for a 2,400 Ci cesium-137 irradiator for the irradiation of blood products.

Special Nuclear Materials License (SNM-297) was amended upward from 3 to 20 grams of plutonium-238 for use in heart pacemakers.

For license No. 19-00296-16, we negotiated an amendment with the AEC to relocate this 9,000 Ci cobalt-60 teletherapy unit. This amendment required new engineering drawings, shielding calculations, etc., in support of the new location.

A preliminary license application was prepared and submitted to the AEC for their review in support of the 32,000 curie cesium-137 experimental irradiator being built by the Lockheed-Georgia Company for the NCI.

During the year the NIH Manual Transmittal No. 1344, "Off-Site Use of Radionuclides and Radiation Producing Devices by NIH Staff Members," was drafted, submitted for approval and issued as a Manual Issuance. This supersedes Policy and Procedures Memorandum (Intramural) No. 14.

Problem Areas

Four personnel monitoring badges exceeded applicable limits during the year and required reporting to the AEC's Division of Compliance.

Again, as over past years, surveys performed by Radiation Safety staff members fell far below what is considered adequate.

The semiannual inventories required excessive preparation and follow-up. For the most part, cooperation received from over 30% of the individuals involved would have to be considered poor.

A shipment of low bid survey instruments purchased during the year required vendor modification before they could be put into use. The service record of these instruments has been extremely poor, requiring excessive in-house repairs. This matter is being referred to Quality Control Section, ODA A MM, for further action.

Equipment continues to be released to Surplus Property bearing radiation signs and labels. The Radiation Safety staff has been required to survey such equipment on numerous occasions. Fortunately, only on one occasion was a contaminated item found. Investigators are being frequently appraised of the impropriety of such transfers.

The problems of the disposal of infectious waste contaminated with radioactive material has not been satisfactorily resolved. The disposal methods for radioactive wastes are not compatible with the disposal of infectious wastes. Studies are underway in cooperation with the Environmental Services Branch and the investigators generating these wastes in an effort to come up with satisfactory solutions.

Radionuclide procurement

	FY '71	FY '72	Change
Millicuries*	84,335	81,435	-3%
Cost	$693,765	$891,984	+29%
Shipments Incoming**	6,061	7,256	+20%
Shipments Outgoing	179	213	+19%
TCO Orders Placed	3,920	5,748	+47%
Authorized Investigators	567	600	+6%

* Not included are the separately licensed 2400 curie cesium-137 blood irradiator for NCI or the 30 cardiac pacemakers containing a total 210 curies plutonium-238.

** During the year the Federal Aviation Administration served notice to the Shipping and Receiving Section of an improperly labeled air shipment. The citation resulted from incomplete transfer of shipment description to the GBL. A standard format has been implemented for the shipment of all future radioactive materials.

Radioactive Waste Disposal

	FY '71	FY '72	Change
55-Gallon Drums Shipped	244	286	+17%
Curies	39	52	+33%
Counting Vials (Trays Shipped)*	18,847	24,917	32%
Cost*	$34,875	$37,555	8%
Liquid Waste Returned from NIH Labs			
Volume (Liters)	17,800	25,300	42%
Number Containers	1,102	1,456	32%

* During the fiscal year the unit of pricing was changed from cost per drum of vials to cost per tray. A cost reduction greater than 50% was realized.

Radionuclide Assays

	FY '71	FY '72	Change
Radiopharmaceutical Assays	3,204	2,900	-9%*
Bioassays on Workers	487	520	+7%

* Number of assays decreased as result of an effort to eliminate procedures not necessary for protection of NIH patients. Maximum effort was directed towards completing assay of products needed early in day by physicians in Diagnostic Nuclear Medical Section.

Although the number of assay procedures has been reduced, the complexity of certain procedures has increased. Nuclides assayed for the first time include copper-67 and its associated contaminant, copper-64, and potassium-43 with its associated contaminant, potassium-42. Routine assays were continued on fluorine-18 contaminated with tritium, (until a source of supply was found not having the tritium contamination) and gallium-67 with its associated contaminant, gallium-66.

Nine investigators monitored by the whole body counter were found to have greater than 10% of the maximum permissible body burden. Eight of the nine had uptakes of ^{125}I, while the ninth person had both ^{125}I and ^{131}I. Health physics investigation of these uptakes indicated tha major cause was mouth pipetting of radioactive solutions, primarily the initial shipment of sodium iodide.

Laboratory Surveys

	FY '71	FY '72	Change
Surveys Performed	1,078	1,494	+38%

The use of compensated overtime continues to be the major means for surveying laboratories. Additional surveys were performed by a part-time employee and by staff health physicist monitoring of iodine releases during labeling experiments. The frequency of surveys continues to fall short of monitoring every active laboratory twice yearly.

Personnel Monitoring

The number of personnel monitoring films processed for fiscal year 1972 increased by 12% (14,900 to 16,605).

A new thermoluminescent dosimeter wrist monitor was developed and calibrated. This monitor, constructed from surgical tubing and small thermoluminescent dosimeter, replaces the older wrist film badges previously used by workers in the Heart Catheterization Laboratories, Diagnostic Radiology, Nuclear Medicine and the Isotope Laboratory. They were developed as a result of a need for a smaller wrist type monitor that could be sterilized.

As a result of dose restrictions placed on the irradiation of normal controls in a particular diagnostic study, a sheet film technique was developed to rapidly monitor these patients. This sheet film was calibrated, using phantom measurements, to relate density of film to organ dose in addition to skin entrance dose. A record of beam size is also obtained from the sheet film.

In general, NIH personnel exposures showed an increase for the fiscal year. This was seen in spite of a slight reduction in the total quantity of radioactive materials manipulated per laboratory area. Again, this reflects a lack of manpower to review and suggest improvements in laboratory handling techniques.

Radiation Producing Machines and Sealed Sources

	FY '71	FY '72
X-Ray Machines		
A. Diagnostic Units	61	40
B. Therapy and Research Units	8	4
C. X-Ray Diffraction Units	9	5
Electron Microscopes	23	20
Accelerators	4	4
	105	73

As required under the various licenses, 246 sealed sources in use throughout the NIH were inspected and surveyed.

Two devices for X-ray beam collimation on image intensified fluoroscopic units were evaluated for routine use with the six such units at the NIH.

An X-ray timer pulse counter was built, tested and put in use for routine surveys.

Computer Programming

With the loss of personnel from this area, continued development of a master system to correlate the many records maintained by Radiation Safety was terminated. Major efforts in this area were directed towards maintaining existing programs and changing job control language statements required by a change within the Computer Center. Highlights for the year include:

A. Isotope Receipts and Semiannual Inventory

An additional program was written to list the monthly receipts of isotopes by institute as a preliminary step to assigning responsibility for areas of the NIH to health physicists.

Considerable time was devoted to the creation of a series of programs to correlate isotope receipts, previous investigator inventory returns, and an inventory of isotopes stored in the

Isotope Laboratory to produce a semiannual inventory report packet. These forms are mailed to NIH investigators to aid reporting of inventories as of the end of the inventory period.

B. The assay program, written previously in COBOL(F), had to be rewritten in COBOL(U) (American National Standard COBOL) as the Computer Center discontinued support of COBOL(F).

C. Film Badge Program

Early in the fiscal year the program for keeping personnel monitoring records was rewritten. Several inherent "bugs" in the original program were eliminated. A savings of from 4 to 6 hours per week of clerical time was realized. The use of the program was greatly simplified so that non-computer oriented personnel can run this program. Additional features provided are:

- Annual and quarterly reports, as required by the Atomic Energy Commission, are automatically generated along with the monthly reports, thus eliminating the necessity of running a separate program.

- A complete listing of all personnel on film badge monitoring service can be obtained without recourse to a separate program.

- The exposure history of personnel may be generated at any time, not just when film badge service is terminated.

- The format of the exposure histories, as generated by the computer and sent out to all those terminating employment or the service, was completely revised and now carries the AEC required statement as indicated in 10 CFR 20.

Training Courses

A course, "Radiological Health for Radionuclide Users," was sponsored jointly by this staff and personnel from the Office of Radiation, Bureau of Radiological Health, and held in the Isotope Laboratory. The NIH staff presented approximately one-half of the lectures and conducted most of the laboratory sessions for the course. Sixty-three NIH investigators completed the training.

A two-day course, "Liquid Scintillation Counting Methodology," was developed and sponsored. The first course, taught by Radiation Management Corporation, was presented to 15 technicians from the National Cancer Institute. Current plans are being made to present this training several times during the next fiscal year if sufficient interest is expressed from the NIH community.

Facilities and assistance were given to the Radiopharmaceutical Section, who sponsored a seminar for hospital pharmacists. Presentation was by the Squibb Hospital Division.

Instruction was provided on radiation safety procedures to more than 100 nurses as part of their training and indoctrination program. One course was given during each of the 12 months.

Honors

The Radiation Safety Officer was elected President-Elect of the Mid-Atlantic Chapter of the American Association of Physicists in Medicine.

A senior Health Physics staff member successfully completed all requirements and was certified by the American Board of Health Physics.

PUBLICATIONS

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PRESENTATIONS AT MEETINGS

"Whole Body Pinhole Skeletal Scintigraphy with ^{18}F." Presented by Camille Boyce at the Technical Session of the annual meeting of the Mid-Eastern Chapter of the Society of Nuclear Medicine, Washington, D.C., March 18, 1972.

"The Liver-Spleen Scan in Hodgkin's Disease." Presented by Michael S. Milder, M.D., at the Scientific Session of the annual meeting of the Mid-Eastern Chapeter of the Society of Nuclear Medicine, Washington, D.C., March 18, 1972.

"Noninvasive Evaluation of Aortocoronary Vein Bypass Grafts by Radioisotope Angiography," Presented by Robert J. Kramer, M.D., at the Scientific Session of the annual meeting of the Mid-Eastern Chapter of the Society of Nuclear Medicine, Washington, D.C., March 18, 1972.

"Transmission and Emission Scintiphotography of the Heart and Mediastinum." Presented by Sybil J. Swann at the Technical Session of the annual meeting of the Mid-Eastern Chapter of the Society of Nuclear Medicine, Washington, D.C., March 18, 1972.

"Gallium Scanning." Lecture presented by Michael S. Milder, M.D. at the Department of Radiology, Washington University School of Medicine, St. Louis, Missouri, March 28, 1972.

"A Word of Caution on Patient Radiation Exposure During Image Amplified Fluoroscopy and Cineradiographic X-Ray Procedures." Presented by P. A. Dickson at the Annual Meeting of the American Association of Physicists in Medicine, July 1971, and an abstract published in Physics in Medicine and Biology, Vol. 17, No. 1, 1972.

"Simultaneous Radiation Dosimetry During Routine Fluoroscopic Procedures in Diagnostic Radiology." Presented by William Wagner, John Buchignani, M.D., and John R. Howley, at the Annual Meeting of the American Association of Physicists in Medicine, July 1971, and published as an abstract in Physics in Medicine and Biology, Vol. 17, No. 1, 1972.

"Only Film Can Tell the Whole Exposure Story in Personnel Monitoring." Presented by William M. Wagner at the Joint Symposium sponsored by the Baltimore-Washington Chapter, Health Physics Society, the Mid-Atlantic Chapter of the American Association of Physicists in Medicine, and the National Bureau of Standards at NBS, October 30, 1971

"Film Monitoring of Normal Subjects During Diagnostic Radiology." Presented by William M. Wagner and John R. Howley at the 17th Annual Meeting of the Health Physics Society, Las Vegas, Nevada, June 1972

"A Field Determination for Proper X-Ray Beam Collimation of Image Intensified Fluoroscopic Equipment." Presented by Dale A. Stevenson at the 17th Annual Meeting of the Health Physics Society, Las Vegas, Nevada, June 1972.

WORKS IN PROGRESS

1. Evaluation of Aortocoronary Vein Bypass Grafts using Radioisotope Angiography.

Noninvasive radioisotope angiography is being utilized to evaluate graft patency in patients undergoing coronary artery surgery. After the intravenous administration of ^{99m}Tc labelled albumin, the bolus passage through the heart and great vessels is recorded by a scintillation camera-TV video system. Selected imaging of the LV phase of isotope transit has been useful in visualizing patent grafts in approximately 50% of cases.

Investigators: R. J. Kramer, NM
E. Stinson, NHLI
D. Conkle, NHLI
D. L. Glancy, NHLI
G. S. Johnston, NM

2. External Measurement of Cardiac Blood Flow by Temporal Derivative Averaging and EKG Gating.

A computer scintillation camera procedure has been devised to compute the ratios of instantaneous cardiac blood flow to the RMS (*root mean square) cardiac blood flow. The instantaneous cardiac blood flow is determined by averaging the count rate derivative over a large number of cardiac cycles at a moment in the cardiac cycle determined by an EKG gate. The RMS value for cardiac flow is obtained by averaging the square of the rate derivative over a large number of complete cardiac cycles. The ratio of the first measure to the latter is independent of patient "geometry" factor and quantity of isotope used. This technique will allow determination of cardiac output throughout the cardiac cycle and may be of clinical use in the differentiation of types of high and low output states.

Investigators: M. V. Green, NM
R. J. Kramer, NM

3. Use of ^{43}K in the Estimation of Myocardial Infarction Size.

Potassium-43 uptake in experimentally produced myocardial infarction in dogs is under investigation. Following the production of infarct by balloon cuff occlusion, ^{43}K will be infused into the previously occluded coronary artery. At a later time, samples of presumed necrotic, ischemic, and normal tissue will be compared for uptake of the radionuclide. The extent of infarction will be estimated by the differential uptake of this isotope and compared to CPK assay of the tissue and to previously recorded electrophysiologic injury potentials.

Investigators: R. J. Kramer, NM
J. W. Hirshfeld, NHLI

4. ^{133}Xe Ventilation-Perfusion Studies in Patients with Mitral Stenosis.

Patients undergoing mitral valve replacement will be followed in the pre and postoperative states with ^{133}Xe ventilation-perfusion studies. Although it is well known that patients with mitral stenosis exhibit a reversal of the normal pulmonary blood perfusion pattern and have a redistribution of blood flow to the lung apices, the time course of this state in pre and post mitral valvulotomy patients has not been extensively investigated. It is hoped that information derived from this noninvasive study will be of predictive value in the natural history of pulmonary hypertension in surgically treated cases of mitral stenosis.

Investigators: A. Roberts, NHLI
R. J. Kramer, NM
M. S. Milder, NM

5. Bone Marrow Scanning in Acute Leukemia.

Patterns of bone marrow distribution have been studied only in a few small retrospective series of patients in various stages of acute leukemia. A group of 25 patients with this disease will be studied prospectively with ^{99m}Tc-sulfur colloid scans of the reticuloendothelial marrow. Scans will be done before and during treatment with cytosine, arabinoside, and thioguanine and then during remission or relapse. The scans will be correlated with bone marrow pathology and response to treatment.

Investigators: M. S. Milder, NM
J. Glick, NCI
E. Henderson, NCI

6. Studies of Phagocytic Function.

The use of ^{99m}Tc-sulfur colloid for study of phagocytosis is being investigated because of its good characteristics for visualization and dosimetry. In order to compare studies to previous reports using gold and albumin colloids, the size distribution and number of the particles is being studied by electron microscopy. The relative contribution of the liver, spleen, and remaining RE system will be examined by dynamic studies to determine the rate constants of phagocytosis.

Investigators: M. S. Milder, NM
P. Grimley, NCI

7. Spleen Uptake of Radiocolloid in Lupus Erythematosus.

Twenty-five patients with SLE have had spleen scans performed. At this time 21 have had scans before and after randomized treatment with prednisone and cytoxan or placebo. Spleen size, liver-spleen activity ratios, and rate of splenic uptake have been recorded. These parameters will be correlated with the course of the disease.

Investigators: J. Decker, NIAMD
R. Aptekar, NIAMD
M. S. Milder, NM
S. M. Larson, NM

8. Radiocolloid Uptake in the Lungs.

Intense pulmonary localization of colloid during routine liver scans is seen rarely, but no adequate explanation for the phenomenon has been reported. We recently observed this in a patient with a classical case of histiocytic medullary reticulosis. Post mortem sections showed malignant macrophages in the lungs, which provide a good explanation for the abnormal localization in this case. Lung scans have not been reported previously in this disease.

Investigators: M. S. Milder, NM
R. J. Kramer, NM
S. Newman, NCI

9. Splenic Infarction Shown by ^{67}Ga Scanning.

A patient with chronic myelogenous leukemia had two gallium scans showing disappearance of a massively enlarged spleen. At autopsy, the spleen was totally infarcted and extensively involved by abscesses. This is the first known instance of a splenic infarct demonstrated by gallium scan, and provides information on the mechanism of gallium uptake.

Investigators: M. S. Milder, NM
A. Rosenblum, NCI
P. Carbone, NCI

10. Estimation of Spleen Size at Peritoneoscopy.

Impression of spleen size at peritoneoscopy will be correlated with size on spleen scan and clinical exam to determine the reliability of this estimate.

Investigators: C. Bagley, NCI
V. DeVita, NCI
M. S. Milder, NM

11. Tumor Scanning with ^{67}Ga.

Whole body scanning with ^{67}Ga has proved useful in localization and follow-up of selected malignancies. As of April 18, 1972, 233 patients had undergone one or more scans. These have been routinely used as a part of the staging data in patients with lymphomas and lung cancer who show positive scans in over 75% of cases. Over 100 patients with lymphomas and lung cancer have been scanned as part of a large cooperative study administered by Oak Ridge National Laboratories. In addition, 20 patients with acute leukemia have had scans which will be correlated with clinical information.

Investigators: P. Carbone, NCI
S. M. Larson, NM
M. S. Milder, NM

12. Detection of Functioning Thyroid Carcinoma Metastases by Whole-Body ^{131}I Scanning and Metabolic Retention Studies.

Patients are given 1 mCi of ^{131}I following surgical or radiation ablation of the thyroid gland. The retention of the radioiodine, expressed as a percentage of the administered dose, is calculated by counting the patient in a "high-activity" total body counting room. A whole body scan visually demonstrates the distribution of the tracer within the body and in any functioning metastases.

Investigators: J. Robbins, NIAMD
R. Sachson, NIAMD
A. E. Jones, NM
R. Aamodt, NM

13. Retention, Localization, and Excretion of Cu-67 and Zn-65 in Patients with Wilson's Disease.

A number of previous studies have indicated that copper metabolism in persons either homozygous or heterozygous for Wilson's disease is abnormal. This abnormality is apparently related to a factor which either regulates biliary copper excretion or copper storage in tissue. Since many of the storage copper proteins also contain zinc, this study was designed to compare whole-body turnover, internal kinetics, and excretion of zinc and copper as well as the biological turnover of selected zinc proteins such as red cell carbonic anhydrase and erythrocuprein in normal subjects and in Wilson's disease, to determine whether any zinc metabolism abnormality exists, and to study the normal physiology of zinc, a very important trace metal, in humans.

Investigators: S. O'Reilly, Department of Neurology,
George Washington University
R. L. Aamodt, NM
G. S. Johnston, NM

14. The Metabolism of Zn-65 in Patients with and without Taste Abnormalities.

Patients with "idiopathic hypogeusia" show a loss of taste acuity following infection or surgery. Both of these processes are associated with increased excretion of zinc in the urine and decreased serum zinc concentrations. This study is designed to study zinc metabolism in these patients and to compare them with patients with hypogeusia following head trauma, patients without hypogeusia but with other unrelated diseases and patients with terminal diseases. Measurements will include whole-body counting, counting over specific areas, urinary activity, fecal activity, blood activity, saliva activity, hair activity, skin activity, and circumvallate papilla activity.

Investigators: P. J. Schecter, NHLI
R. I. Henkin, NHLI
C. F. T. Mattern, NIAID
R. C. Hoye, NCI
R. O. Wolf, NIDR
R. L. Aamodt, NM

15. The Metabolism of Zn-65 in Patients with Various Types of Porphyria.

Several investigations have suggested that abnormal metabolism of divalent transition metals is associated with various types of porphyria. This has led to attempts to treat porphyria patients with various chelating agents. Although these treatments have been reported to be successful, little data is available which relates to the underlying abnormalities of metal metabolism in porphyria. This study was designed to evaluate the role of zinc in patients with acute intermittent porphyria and cutanea tarda. Following ingestion of 0.50 - 2.0 mCi of Zn-65 patients will be measured in the whole body counter and activity in blood, stool, urine, saliva, and tissue biopsies will be measured. During the course of the study, patients will have no treatment for 12 days, be treated with 25 mg zinc sulfate for 12 days, be treated with histadine for 12 days + receive no treatment for a period of time to provide a control.

Investigators: D. P. Tschudy, NCI
J. B. Levine, NCI
R. I. Henkin, NHLI
R. O. Wolf, NIDR
C. F. T. Mattern, NIAID
G. S. Johnston, NM
R. L. Aamodt, NM

16. Metabolism of Gallium-67 in Patients with Malignancy.

Retention and excretion of Ga-67 citrate for whole-body scanning is being studied in a few patients with malignancy. Studies include whole body activity measurements, blood, urine, and stool. This study is intended to provide information about the metabolism of gallium as well as provide comparison data for studies of the therapeutic effect of stable gallium.

Investigators: J. Arseneau, NCI
R. L. Aamodt, NM
G. S. Johnston, NM

17. ^{67}Gallium Citrate Scintigraphy of Brain Tumors.

The localization of ^{67}gallium citrate by brain tumors and their subsequent visualization by gamma camera scintigraphy is under study. Gallium-67 citrate is known to have an affinity for neoplastic tissue and necrotic tissue. Thus far sixteen patients with known brain tumor have been studied with ^{67}gallium citrate and the images have been compared with those obtained

using the common brain scanning agent ^{99m}technetium pertechnetate. Approximately one-third of brain tumors have been more clearly visualized by ^{67}gallium citrate than with ^{99m}technetium.

Investigators: M. Koslow, NINDS
A. E. Jones, NM
A. Ommaya, NINDS
G. S. Johnston, NM

18. Radionuclide Localization of Cerebral Infarction in Rhesus Monkeys.

Current literature observes that stroke followed by cerebral infarction may be detected ten to fifteen days after onset in the human. Verification of this timing plus evaluation of the best nuclides for detection of these lesions is being tested in rhesus monkeys that have undergone surgical ligation of the middle cerebral artery approached through the optical orbit. Resolution of the radionuclide stroke pattern is also under study.

Investigators: G. Di Chiro, NINDS
T. Harrington, Georgetown University
L. Albright, NINDS
S. Swann, NM
A. E. Jones, NM
G. S. Johnston, NM

19. Brain Scans in Patients with Hypogeusia.

Patients are being screened for possible neoplastic lesions in the anterior cranial floor as a cause of olfactory dysfunction. The localization of radionuclide in the region of the nose or frontal cranial vault appears to be significant when associated with hypogeusia. Evaluation of the association between hypogeusia and abnormal brain scans is under study.

Investigators: R. Henkin, NHLI
A. E. Jones, NM
G. S. Johnston, NM

20. ^{65}Zn Localization in the Hippocampus of the Rhesus Monkey.

It has been suggested that the region of the hippocampus is rich in zinc and that this tissue becomes zinc depleted following seizure. The high concentration of zinc within the hippocampus has been demonstrated by autoradiography in the present study. Zinc localization within the hippocampus will be evaluated following the induction of seizure. The results obtained will ultimately provide data for the application of ^{67m}Zn to radionuclide scintiphotography.

Investigators: A. E. Jones, NM
M. Koslow, NINDS
A. Ommaya, NINDS
G. S. Johnston, NM

21. Correlation of Liver Size Determined by Percussion versus Scan.

Percussion is a time-honored and convenient bedside method of determining liver size. The factors which influence the percussion measurement are currently under investigation, and a comparison is being made to the liver scan findings. The dimensions of the liver at several different planes are determined by percussion and marked on the scan for comparison with actual scan measurements.

Investigators: T. Chalmers, Director, CC
S. M. Larson, NM
M. V. Green, NM
M. S. Milder, NM

22. The influence of Gastrointestinal Hormones on Hepatic Blood Flow.

A primate model has been developed to study the hepatic artery and portal vein blood flow, by xenon clearance curves. The influence of gastrointestinal hormones on hepatic artery and portal vein blood flow is being studied. Hormones under investigation include pitocin, glucagon, pentagastrin, secretin, and cholecytokinin. The influence of alcohol will also be evaluated.

Investigators: T. Chalmers, Director, CC
S. M. Larson, NM
R. J. Kramer, NM
R. Millar, NCI

23. Patterns of Cerebrospinal Fluid Flow.

The flow patterns of cerebrospinal fluid have not been elucidated in detail. An animal model has been developed in which radioisotope is introduced directly into the ventricles of a monkey, and the flow pattern is studied as a function of time.

Investigators: G. Di Chiro, NINDS
S. M. Larson, NM
T. Harrington, Georgetown University
S. Swann, NM

24. Influence of Stable Gallium on Hepatoma Progression in Monkeys.

Stable gallium has been shown to inhibit tumor growth in vitro. In order to evaluate the influence of radiogallium on hepatomas in monkeys, sequential gallium-67 photoscans are obtained in monkeys with hepatoma treated with stable gallium. Excellent liver scintiphotos have been obtained using the gamma camera, the pinhole collimator, and radiogallium-67. The effect of stable gallium on tumor appearance, lesion size is being evaluated. Correlation is obtained with ^{99m}Tc sulfur colloid.

Investigators: R. Adamson, NCI
S. Swann, NM
S. M. Larson, NM

25. Gallium-67 in the Evaluation of Patients with Chronic Myelogenous Leukemia.

Gallium-67 appears to concentrate in malignant granulocytes in the peripheral blood. Whole body retention and scans, peripheral blood autoradiography and response to therapy are being correlated in a series of patients with chronic myelogenous leukemia.

Investigators: J. Arseneau, NCI
G. Canellos, NCI
R. Aamodt, NM
M. Milder, NM
S. Larson, NM

TABLE I

Diagnostic Nuclear Medicine Section

Summary of Tests Performed

Tests	FY 1971	FY 1972	% Change
Brain	548	748	36%
Liver	588	645	10%
Cisternogram	77	70	10%*
Bone (Whole Body)	170	371	118%
Gallium (Whole Body)	---	267	100%
Lung	90	133	48%
Renal	134	110	18%*
Thyroid Images	180	166	8%
Thyroid Uptakes	400	215	46%
Miscellaneous	193	225	17%
Total	2380	2950	---
% Change	---	24%	---

* decrease

TABLE II

Clinical Nuclear Medicine Equipment

April 1972

Equipment	Date Acquired	Primary Use
Pho-Gamma III, gamma scintillation camera (Nuclear-Chicago)	1967	quantitative and dynamic studies-rapid static organ imaging
Pho-Gamma III, (High Performance) gamma scintillation camera (Nuclear-Chicago)	1971	quantitative and dynamic studies-rapid static organ imagine
Pho-Gamma III, (High Performance) gamma scintillation camera (Nuclear-Chicago)	1972	quantitative and dynamic studies-rapid static organ imaging
Pho-Dot rectilinear scanner (3-inch diameter) (Nuclear-Chicago)	1966	thyroid scans - liver-spleen uptakes
Dual probe whole body scanner (5-inch diameter) (Ohio-Nuclear)	1970	whole body scans (bone, ^{67}Ga citrate, ^{131}I-retention), routine organ scanning of liver, spleen
Dual probe whole body scanner (5-inch diameter) (Ohio-Nuclear)	1971	whole body scans (bone, ^{67}Ga citrate, ^{131}I-retention, routine organ scanning of liver, spleen

TABLE II (continued)

Clinical Nuclear Medicine Equipment

Equipment	Date Acquired	Primary Use
Renogram dual probe (Nuclear-Chicago)	1971	renal studies and organ counting
Simultaneous four-probe rectilinear scanner ("Tetrascanner") (NIH custom made)	1959	brain and cisternography scans (This instrument has become obsolescent because it is too slow and has less adequate resolution than the newer instruments.)
Thyroid uptake assembly (Nuclear-Chicago)	1967	thyroid uptakes
Mediac dose calibrator (Nuclear-Chicago)	1969	confirmation of doses
Film processor (Kodak X-omat)	1972	develop X-ray and 35 mm film
WYLBUR (IBM)	1971	process research data and store patient study results

TABLE III

Diagnostic Nuclear Medicine Section

Patient Studies

Date	1967	1968	1969	1970	1971	1972
Total	2568	3093	1637	2181	2380	2950
Yearly % Change		20 %	47 %	33 %	9 %	24 %
Yearly % Change from 1967		20 %	36 %*	15 %*	7 %*	15 %

* Decrease

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

NURSING DEPARTMENT

CC-28
Serial No.

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July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

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CC-28
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PROGRAM GOALS

The long-range goals of the Nursing Department continued to be:

1. To provide the best nursing care possible with the available nursing personnel.

2. To develop all personnel in the Nursing Department to the fullest extent of their capabilities and the professional nurse as a fully professional individual.

3. To share with the community those accomplishments in the Nursing Department which are appropriate for the full development of nursing as a community service.

In order to accomplish these objectives in a systematic fashion the Nursing Administrative Council set short-range goals which members believed could be accomplished within a year's time. The short-range goals for FY 1972 were:

1. The establishment of measureable standards of nursing care.

2. The improvement of the use of the administrative unit clerk by revising the orientation and increasing the assigned responsibilities.

3. The expansion of the responsibilities of the practical nurse.

4. The reevaluation of the supervisory program with emphasis on the supervisor as a resource person.

5. The investigation of the 10-hour day with the aim of improving time planning over the 24-hour period.

6. To seek revision in the regulations established by the Medical Board for control of stipulated categories of drugs in order to achieve a more workable reporting for the nursing units.

7. To place emphasis on the safety factors of electrical equipment on the nursing units by incorporating precautionary measures in the inservice education program.

8. To provide for frequent demonstration of inhalation therapy equipment in order to keep nursing personnel familiar with new equipment and techniques.

9. To organize a play program for handicapped children in order to improve the total care of these children.

10. To study the time schedules of the Nursing Department in order to provide adequate coverage on all tours of duty as equitably as possible.

11. To reemphasize the need for in-depth interpretive programs as they relate to the current ongoing clinical research -- employees function more effectively when they understand the purpose toward which their efforts are directed.

12. To develop an evaluation tool and process related to planned inservice education programs.

13. To incorporate a staff nurse in the plans for attendance at the biennial American Nurses Association convention.

14. To incorporate two workshops on Personnel Evaluation in the annual inservice education program.

15. To evaluate the current programs arranged for student nurses in order to revise and improve them.

16. To devise a student nurse elective program for collegiate nursing students who have completed three years in an approved program in nursing.

17. To establish guidelines for visitors to the Nursing Department, Clinical Center, National Institutes of Health.

PROGRESS MADE

Fiscal Year 1972 was extremely demanding of nursing personnel and the fact that the major requirements for safe patient care and adequate research support were met was a major accomplishment. The restrictions on hiring of personnel presented increasing complications in the management of nursing services because of the need for nurses with experience to provide stability on the nursing units. The GS 5 level of entrance for registered nurses brings new graduates on duty who must be trained to responsibility. The transfer of greater responsibility to practical nurses also requires considerable orientation time. Members of the administrative staff felt that nursing personnel should be complimented on the results achieved under very stressful conditions.

The orientation of personnel to the requirements of more than one nursing unit's projects was accomplished as a necessary method of meeting emergency demands. The lack of adequate training facilities and reduced training personnel presented some obstacles to this accomplishment. Our solution to staffing prob-

lems was the exchange of personnel on a daily basis, which necessitated all personnel being familiar with a variety of projects. In addition to the personnel for direct patient care, the use of the administrative unit clerk for expanded managerial activities was accomplished with good results on the majority of units.

In accord with an established goal for FY 1972, a training program to prepare practical nurses for charge duty during the evening and night tours of duty on selected units was organized and achieved. Unfortunately, the establishment of the restrictive average grade level made it impossible for us to promote trained practical nurses to the grade level which incorporates this aspect of responsibility. However, many of the practical nurses trained to this level of responsibility requested that they be given an opportunity to function as trained in order to avoid the loss of skills.

A concentrated effort was made during the past year to develop the senior staff nurse in the skills of supervision with emphasis on professional judgment, personnel utilization and evaluation, and decision making. The aim was to achieve maturity of judgment so that the administrative supervisor functioned as a resource person with emphasis being placed on the decision making function of the senior staff nurse in charge of the shift. The interpretation of the importance of cooperative effort in this direction was undertaken through the Staff Nurse Advisory Committee.

Following several near catastrophies on some of the nursing units, an administrative decision was made to increase the emphasis on safety factors of electrical equipment by incorporating precautionary measures in the Nursing Department's inservice education program on a continuing basis. The Inservice Education Committee designed an interpretive workshop for appropriate groups of employees which was repeated three times during the year. It is satisfying to note the degree of concern all categories of personnel have expressed for this type of program.

A thorough review of all staffing patterns was accomplished with the aim of determining the necessity for the requirement of rotation of tours as a condition of employment. It was the unanimous decision that staffing could not be accomplished without this requirement. Nursing administrative personnel recognize the hardships related to rotation of tours, but it is imperative that fairness of scheduling be established for each employee. The demands for nursing care are such that a change in policy cannot be achieved at this time.

In accordance with a request from the Staff Nurse Advisory Committee, programs related to the ongoing clinical research were presented by several of the investigators. The staff felt that interpretive programs clarified and emphasized the aims of specific clinical research projects and made the required nursing support more meaningful.

The Nursing Administrative Council gave very careful consideration to the responsibility of the Nursing Department for cooperative programs with schools

of nursing. Many requests are annually received to provide special programs, tours, or affiliations for individual schools of nursing. After a thorough review of current nursing service demands, human resources, and professional obligation, a compromise was reached to provide two demonstration days for students in any school of nursing who wished to attend. The days were scheduled as one day in the spring and one day in the fall. This was accomplished with very good attendance on both days. Followup letters of appreciation from the schools of nursing indicated an interest in our continuing this activity.

It was also decided to continue our agreement to provide a work-learn program for students recruited by the American Cancer Society during a 10-week period of the summer months. This program provides an opportunity for students from a variety of programs to have experience in the care of patients with cancer, and also provides contact with the Clinical Center and future recruiting possibilities.

Further, it was decided to establish an ongoing elective program for student nurses who had completed three years in a baccalaureate program of nursing. This program was designed along the lines of the established program for medical students. Three students from Northeastern University were enrolled in the program in April 1972.

Representative committees from all categories of personnel in the Nursing Department functioned to improve communications between nursing service administrative personnel and the various categories of personnel providing nursing care to patients. The interest in this kind of exchange was high, resulting in many suggestions for improvement of equipment, organization, and method. We are pleased with this degree of interest expressed by employees.

In accord with a goal of long duration, space for a central receiving room for specimens was allocated to the Nursing Department during the spring of 1972 and a system of operation was designed in cooperation with the Clinical Pathology Department. A pilot study went into effect to determine any problem areas before full operation is established.

In preparation for a coronary care unit, the Chief of the Heart Nursing Service visited a number of coronary care units in different geographical locations to examine equipment, review organized routines, and gain assistance with staffing patterns and objectives. These observation visits proved helpful to our planning. Three nurses were sent for training in coronary care to specialized teaching programs outside the service in preparation for the opening of the coronary care unit.

As we have done annually for three years, two practical nurses were sent for advanced training in professional nursing in order to become eligible to take State Board examinations for registration of nurses. Two nurses who had completed the Associate Arts degree program in nursing at Washington Technical Institute rejoined the staff in July 1971 and are now registered nurses. This is part of the program for Upward Mobility which has considerable merit for nursing needs.

We continued to assign a nurse to the development of computer techniques to assist in some of the routine aspects of nursing service. The daily kardex activity record was computerized with increased efficiency for nursing unit 9 East. A preliminary exploration into the retrieval of medicine card information for the administration of medications was started.

The number of scheduled hours for training toward promotion in the Nursing Department totalled 2,226 in FY 1972. The number of hours provided employees to attend the Federal Upward Mobility College was 1,774.25.

The role of the professional nurse was expanded in the Outpatient Department by designating and training two nurses for intravenous administration of ordered research drugs to patients in the Leukemia Study. In addition, nurses on the Eye Nursing Service were trained to determine intraocular tension when a physician was not available and for those patients who required this determination during the night. Nurses on 12 West were instructed in aspects of the solid tumor study wherein they administered intravenous solutions as part of the daily patient care.

The use of the male patient care technician teams was expanded during FY 1972. This method of meeting patient care requirements proved to be very successful. Unfortunately, this group of employees who should be promoted to the GS 6 level cannot be promoted because of the average grade level which must be maintained in the Nursing Department.

The Inservice Education Committee did an exceptionally good job in preparing workshops, seminars, and demonstration sessions to keep the interest and competency level of employees at a high point. This committee had a majority of members from the staff nurse category and took full responsibility for the inservice education program.

We continued to publish the nursing care conferences which each nursing service presents annually. These monographs are in great demand, especially in schools of nursing, and they are a source of pride for the participants who spend many hours of their own time in preparing the content.

Improved records helped provide an ongoing daily picture of demands on nursing service at the Clinical Center and helped to determine the time for change in emphasis as the census on the various institutes fluctuated and change in demand occurred.

The use of videotapes for orientation and demonstration purposes on the Neurology Nursing Service proved to be effective and established a method for reducing personnel time. The tapes can be viewed by one nurse, or a group of nurses, without a head nurse or supervisor being present. The demonstration of a procedure can be reviewed as many times as necessary for the nurse or nursing assistant who needs this assistance.

DEVELOPMENT AND TRENDS

As has been the practice in the Nursing Department since its inception, we continued to train all employees to the level of their demonstrated competency. However, during FY 1972 there was increased emphasis on the training of lower grade employees for greater responsibility. We were hampered by reduced space for training activities and reduced training personnel. It is evident that there will be continuing emphasis on this aspect of management of nursing services. Such being the case, there should be equal emphasis on the provision of adequate facilities for training purposes when human patients are the recipients of the results of these programs.

Despite the reduction in support personnel, the program demands did not decrease and in some areas were increased. Thus, the demands on nursing personnel were excessive and, in what seems to be a direct relationship, errors in medication, handling of specimens and patient routines increased. Such errors are financially expensive and emotionally traumatic for conscientious employees.

The satisfactions of working in the Nursing Department of the Clinical Center have always been mainly related to pride in maintaining a high quality of nursing care. However, both professional nurses and sub-professional personnel are now voicing dissatisfaction in working in a situation where the quality of nursing care is obviously deteriorating, even though it is recognized that all personnel are doing their best. These facts indicate a need to determine some substitute methods for human attention in meeting patient care needs.

The unpredictable nature of demands for nursing service made organized planning of time schedules, equipment, space, and supplies extremely difficult. With the restriction on positions it was extremely difficult to meet the minimal needs for patient safety during the past year. Complicating demands included continuous nursing care, special training aspects necessitating training time outside the service, complicated new techniques incorporating new mechanisms with which all personnel must become familiar, and requests for nursing personnel to do extra activities which cannot logically be interpreted as nursing functions.

The increase in the number of patient visits in the Outpatient Department has been steady since 1967, with a marked increase in 1971, as shown in the attached Outpatient Nursing Service Statistics Table 1. The trend toward increased ambulatory care services is definite and it is expected that the Outpatient Nursing Service will continue to require increasing numbers of personnel. The attached Outpatient Nursing Service Statistics graphs related to procedure levels in 1971 and 1972 speak for themselves.

If the restriction on allocated positions continues, it is obvious that mechnized substitutes for people must be utilized wherever possible. During FY 1972 the Neurology Nursing Service purchased video taping equipment for the purpose of putting on film an orientation program along with patient care routines in relation to the research protocols, demonstration of neurological

procedures and reminders of importance in the care of neurological patients. This method of presentation allows for repetition of viewing as often as necessary and proved to be very successful in meeting some of the training needs of personnel on the Neurology Nursing Service. The Heart and Cancer Nursing Services have purchased similar equipment to be used as training aids during the coming year.

There is a definite trend toward increasing the responsibilities of professional nurses with preparation in specific areas of responsibility. There is every indication that this trend will continue with more of the routine bedside care of patients being turned over to practical nurses and patient care technicians.

The marked increase in activity in the Outpatient Department is an indication of the trend toward ambulatory care centers. In terms of our experience, it is logical to assume that this type of care will continue to expand as it provides for care of more patients and full use of facilities.

There appeared to be a tendency toward increasing family involvement in patient care, especially with pediatric patients. In view of our past year's experience it would seem logical to recommend Barcolounger chairs for all solaria.

Throughout the Clinical Center there is a definite effort to increase the training of lower grade employees in order to increase their level of responsibility. The Nursing Department since its inception has had a progressive training program. During FY 1972 three practical nurses were given charge duties on selected units during the evening and night tours of duty.

The number of protocols on any one unit in the various institutes increased, which in turn put a greater load on the nursing units. Formerly, the personnel on a nursing unit were required to know three to four protocols. At the present time there can be five to seven protocols on some units, increasing the stress and responsibility level of personnel.

On the Psychiatric Nursing Service the number of acutely psychotic patients increased over the previous year. Several injuries were sustained by employees in their encounters with severely disturbed patients. If we continue to have these types of patients, some additional provision is needed for seclusion rooms and methods of restraint as the staff assigned to the Psychiatric Nursing Service is not sufficient to cope with acute disturbances over a long period of time.

The quality of care decreased but was surprisingly high in relation to the reduced number of personnel available to provide nursing care. For conscientious employees the deterioration of quality was a source of considerable resentment. This can eventually lead to a "not caring" attitude. Administrative efforts have been concentrated on being as supportive as possible.

The expanded use of the computer for nursing unit routines in FY 1972 led us again to believe that the use of the computer to our advantage is getting

closer to a realization.

The physical and emotional demands on nursing personnel continued to be great with evident dissatisfaction on the part of employees at not being able to meet the standard of nursing care they had set for themselves. Because of the indications of low morale and unrest resulting from these frustrations, a concerted effort was made to incorporate all categories of personnel in the planning phases of the nursing program and to provide an increased number of "general meetings" to discuss problems and receive suggestions.

In addition, there was a constant effort made to recognize individual and group accomplishments in print and with complimentary memoranda for the personnel folders. It goes without saying that pride in the attitude, performance, and contribution of most employees in the Nursing Department is very great.

MAJOR PROBLEMS

1. The lack of proper organization for efficiency on the nursing units is seen as a very serious problem. There is a real need to schedule procedures and meetings in order to provide for even distribution of demands over the entire day. There would be far less frustration on the part of the staff if all physicians did not want assistance at one time. On those units where cooperation in this direction was achieved things operated much more smoothly.

2. The lack of a proper appointment schedule in the Outpatient Department plus a totally unsatisfactory scheduling system in the Operating Rooms resulted in many wasted hours for nursing staff and physicians. In addition, the temper tolerance level was exceeded in more than one instance with resulting unpleasant explosions.

3. The resentment of staff over the responsibility for drawing of blood for routine specimens has not abated. Nursing personnel would not resent this delegated responsibility if it did not interfere with nursing care of patients. However, there is continual complaint that it does.

4. Lack of space is an acute problem, especially in the area of education and training. The Nursing Department is organized on the concept of full utilization of personnel which requires continuous training classes in order to achieve upward mobility. The number of employees who can be accommodated in any one class is limited to ten because of space problems and there is not enough classroom space available to allow for more than two training classes occurring simultaneously.

   Storage space on the nursing units is inadequate and some nursing units have no storage room at all.

   It is becoming increasingly difficult to find adequate meeting rooms. This

presents many problems because with today's events it is imperative that employee-administration communications be kept as complete as possible and this can only be achieved by direct discussion.

5. The demand for continuous nursing care was greater than could be met during peak demand periods. The nursing staff has, from the opening of the Clinical Center, been educated to the point of view that for research purposes orders are carried out with careful attention to accuracy as this is the focal point for nursing support of clinical investigation. In many situations the type of support needed to assure accurate observation, data, nursing intervention, or patient safety can only be achieved by the continuous presence of a person trained to the protocol requirements of a given unit. The number of patients in an acute stage of illness was increased during FY 1972 and the provision for the continuous care needed was often lacking. Consequently, there were more patient and family complaints and more frustration for the staff.

6. Escort and messenger activities are increasing every year and we do not have sufficient positions to meet all of these obligations. There are particular problems with Nuclear Medicine where conflicting appointments are scheduled, and patients are sent back to the unit unscanned because an isotope has not arrived and cancellation notice is not received on the nursing unit.

7. The number of new projects, especially in the National Heart and Lung Institute, put an increased load on an already overburdened Nursing Department.

8. The lack of adequate facilities and staff to manage patients with psychotic episodes on the medical-surgical units presented many crisis situations during FY 1972.

9. Proper storage space for old charts that must be retained on the unit was a very real problem on all nursing services.

10. Although we have been pursuing an intercommunication system that will meet our needs on the nursing units we still do not have a replacement for the original system which has reached a point beyond repair.

11. Numerous leaks from the ceiling on 13 East, plus inadequate control of heat on the entire 13th floor, made the working situation almost unbearable for patients, staff, families, and visitors.

12. The general deterioration of cleanliness in the physical environment was unsightly and diminished the motivation of other categories of workers to maintain an orderly, clean setting in the patient care area.

13. The continued restrictions on position ceilings resulted in a shortage of personnel which seriously detracted from the quality of nursing care provided patients on the various services.

14. As was reported last year, staff morale was very low and the resentment at what is interpreted as inequities is very high. The main complaints centered around too much evening and night duty, too much overtime, and failure to be promoted because of the average grade restrictions. Resentment was particularly high among nursing personnel because of the consistently high percentage of error in the payroll.

15. The present time cards are a very great waste of time, energy, and materials, and many time clerks complain of eye strain. The whole system of timekeeping and payroll is the greatest single factor of poor morale throughout the Nursing Department.

16. The lack of proper laundering of uniforms was a source of complaint, as well as the length of time it took to get uniforms back from the Laundry.

17. Both parking and housing continued to be problems related to the maintenance of a satisfactory nursing service.

18. The advanced classes required for promotion within the Nursing Department, plus the Upward Mobility program, plus the Adult Education courses resulted in many staff members being absent from the nursing units for a high percentage of time, thus decreasing the number of nursing care hours available for patient care.

ACCOMPLISHMENTS

Despite the many problems associated with shortage of personnel, increased demands for nursing service, and a fluctuating census with high peaks and low valleys, we were able to keep our focus on nursing care of patients.

1. The coordination of inservice nursing programs with emphasis on quality rather than quantity resulted in fewer hours but more meaningful seminars, demonstrations, and workshops directed toward specific improvements within the Nursing Department.

2. The videotape library on the Neurology Nursing Service was expanded by 14 tapes during this fiscal year. The continuation of this means of inservice education proved to be an accomplishment of real merit in saving time on the Neurology nursing units. This program demonstrated the value of this tool in preserving safe care of patients, improved staff morale, and patient care of the highest quality obtainable with a reduced staff. The Cancer Nursing Service and the Heart Nursing Service purchased similar equipment and began taping the basic procedures related to established protocols.

3. We have, with difficulty, maintained the orientation program for professional nurses. This program is vital to safe patient care, adequate nursing support to research protocols, and avoidance of frustration for new and inexperienced nurses.

4. We were able to send seven head nurses and three senior staff nurses to various supervisory classes in an effort to enlarge the managerial skills of the professional nurse.

5. There was an increase in the number of multidiscipline conferences on some of the nursing services. Nursing personnel regard these conferences as major factors in understanding their role in clinical research.

6. The introduction of surgical technicians into the Operating Rooms made possible a reduction in the number of professional nurses assigned to this area.

7. Selected GS 5 practical nurses were given a training program which included orientation to charge nurse duties and the administration of non-research medications. Following satisfactory completion of the course and upon recommendation from the chief of the assigned nursing service, three practical nurses were assigned to selected units for charge duty on the evening or night tour of duty. It is hoped that these practical nurses can be promoted within a reasonable time period as they are functioning at a graded GS 6 level.

8. The use of the administrative unit clerk increased with value to the nursing services. The pattern established was that of one administrative clerk to two nursing units. This pattern will be continued in the coming year.

9. The experimental program on computer use for nursing unit routines was expanded on the 9 East unit where the pilot experiment is located. Nurses on 9 East are pleased with the results of this pilot study.

10. The Staff Nurse Advisory Committee functioned on an increasingly mature plane and was delegated some additional responsibilities related to the professional development of staff nurses.

11. The representative committees of practical nurses and nursing assistants effectively functioned to improve communications between these groups and management. As a result of the monthly meetings many suggestions have borne fruit.

12. All job descriptions in the Nursing Department were reviewed and, in most instances, rewritten to incorporate the restructuring of positions within the Nursing Department. The time consumed in this endeavor was considerable.

13. Student Demonstration Days were scheduled on November 4, 1971 and April 21, 1972. This method of presenting nursing aspects of selected diagnoses now being studied eliminates individual school requests for touring, demonstrations, or lectures.

14. The Nursing Practice Committee reviewed and revised those procedures deal-

ing with all aspects of the administration of medication, the handling of drugs, and the charting of medications.

15. As in other years, the number of visitors to the Nursing Department was high. Interest in the Laminar Air Flow Rooms was the reason for many visits and on five occasions we were asked to provide extended time in observation of the techniques used in this facility. It was an extreme hardship to accommodate visitors when it was an accomplishment in itself to complete 24-hour patient demands. However, the personnel concerned with visitors were gracious in extending themselves to meet the expressed needs of guests.

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Table 1
Hours of Continuous Nursing Care
Provided by Each Nursing Service
May 1, 1971 - April 30, 1972

Nursing Service	May 1, 1971 to April 30, 1972
	Hours
Allergy and Infectious Diseases Nursing Service	2,752.50
Arthritis and Metabolic Diseases Nursing Service	2,666.00
Cancer Nursing Service	22,651.50
Eye Nursing Service	32.00
Heart Nursing Service	22,255.00
Neurology Nursing Service	14,217.75
Psychiatric Nursing Service	8,699.75
Total	73,274.50
Number of man days	9,159.31
Number of man years	35.09

Table 2
Hours of Continuous Nursing Care
Provided by Each Nursing Service
Fiscal Years 1971 and 1972
(For Comparison)

Nursing Service	1971	1972
	Hours	Hours
Allergy and Infectious Diseases Nursing Service	2,783.50	2,752.50
Arthritis and Metabolic Diseases Nursing Service	6,756.00	2,666.00
Cancer Nursing Service	12,718.50	22,651.50
Eye Nursing Service	-----	32.00
Heart Nursing Service	31,672.25	22,255.00
Neurology Nursing Service	6,588.75	14,217.75
Psychiatric Nursing Service	6,723.75	8,699.75
Total	67,242.75	73,274.50
Number of man days	8,405.34	9,159.31
Number of man years	32.20	35.09

Table 3
Number of Hours of Nursing Care Given
By Part-Time Nursing Staff (WAE)
On Each Nursing Service
May 1, 1971 - April 30, 1972

Nursing Service	May 1, 1971 to April 30, 1972	Percentage Distribution of Staff
	Hours	
Allergy and Infectious Diseases Nursing Service . .	4,324.25	5.97%
Arthritis and Metabolic Diseases Nursing Service. .	5,979.00	8.26%
Cancer Nursing Service	27,030.50	37.38%
Eye Nursing Service	730.75	1.01%
Heart Nursing Service	14,269.25	19.73%
Neurology Nursing Service	12,666.75	17.51%
Outpatient Nursing Service.	3,579.00	4.95%
Psychiatric Nursing Service	3,372.50	4.66%
Education and Training (Orientation).	367.00	
Total	72,319.00	
Number of man days	9,039.62	
Number of man years	34.63	

Table 4
Number of Hours of Nursing Care Given
By Part-Time Nursing Staff (WAE)
On Each Nursing Service
Fiscal Years 1971 and 1972
(For Comparison)

Nursing Service	1971	1972
	Hours	Hours
Allergy and Infectious Diseases Nursing Service	4,592.25	4,324.25
Arthritis and Metabolic Diseases Nursing Service	6,967.25	5,979.00
Cancer Nursing Service	24,543.00	27,030.50
Eye Nursing Service	1,633.00	730.75
Heart Nursing Service	17,299.50	14,269.25
Neurology Nursing Service	12,645.50	12,666.75
Outpatient Nursing Service	1,175.50	3,579.00
Psychiatric Nursing Service	4,310.25	3,372.50
Education and Training (Orientation)	930.50	367.30
Total	74,096.75	72,319.00
Number of man days	9,262.09	9,039.62
Number of man years	35.48	34.63

Table 5
Number of Hours of Overtime by Service
May 1, 1971 - April 30, 1972

Nursing Service	May 1, 1971 to April 30, 1972
	Hours
Allergy and Infectious Diseases Nursing Service . . .	990.75
Arthritis and Metabolic Diseases Nursing Service. . .	1,684.00
Cancer Nursing Service.	2,416.75
Eye Nursing Service	343.75
Heart Nursing Service	1,655.50
Neurology Nursing Service	1,320.00
Outpatient Nursing Service.	1,272.75
Psychiatric Nursing Service	1,742.25
Surgical Nursing Service.	2,757.25
Central Nursing Office.	1,523.00
Total	15,706.00
Number of man days.	1,963.25
Number of man years	7.52

Table 6
Number of Hours of Overtime by Service
Fiscal Years 1971 and 1972
(For Comparison)

Nursing Service	1971	1972
	Hours	Hours
Allergy and Infectious Diseases Nursing Service	1,414.25	990.75
Arthritis and Metabolic Diseases Nursing Service	1,930.25	1,684.00
Cancer Nursing Service	3,371.00	2,416.75
Eye Nursing Service	222.50	343.75
Heart Nursing Service	1,586.75	1,655.50
Neurology Nursing Service	1,368.00	1,320.00
Outpatient Nursing Service	1,514.00	1,272.75
Psychiatric Nursing Service	1,434.50	1,742.25
Surgical Nursing Service	2,844.50	2,757.25
Central Nursing Office	1,069.75	1,523.00
Total	16,755.50	15,706.00
Number of man days	2,094.43	1,963.25
Number of man years	8.02	7.52

Table 7
Total Hours of Nursing Care
and Average Number of Hours
of Nursing Care per Patient per Day
Provided by Each Nursing Service
May 1, 1971 - April 30, 1972

Nursing Service	Number of Patient Care Days	Professional Hours of Nursing Care *	Non-professional Hours of Nursing Care *	Total Hours of Nursing Care	Avge.Hrs. Nsg. Care per Patient per Day
Allergy & Infectious Diseases	11,873.00	30,738.25	20,526.25	51,264.50	4.32
Arthritis& Metabolic Diseases	13,489.00	39,851.00	36,097.00	75,948.00	5.63
Cancer	32,849.00	96,451.00	94,851.25	191,302.25	5.82
Eye	3,948.00	11,838.00	2,436.00	14,274.00	3.62
Heart	23,378.00	69,448.25	51,014.00	120,462.25	5.15
Neurology	12,536.00	42,214.50	33,763.50	75,978.00	6.06
Psychiatry	16,377.00	48,515.00	50,706.00	99,221.00	6.06
Grand Total	114,450.00	339,056.00	289,394.00	628,450.00	5.49

* Includes Regular and Supplemental Staff

Table 8
Accessions and Separations by Grade
May 1, 1971 -- April 30, 1972

Grade	Accessions	Separations
Commissioned Officers	5	4
Supervisory Nurse GS 11 and GS 12	2	7
OR, Psychiatric, and Clinical Nurse GS 9 .	5	28
OR, Psychiatric, and Clinical Nurse GS 7 .	41	39
Nurse GS 5 and GS 4	33	13
Technician GS 5	-	3
Practical Nurse GS 5, 4, and 3.	11	9
Nursing Assistant GS 5, 4, 3, and 2	72	45
Clerical GS 5, 4, 3, and 2	29	29
Total FY 1972	198	177
Total FY 1971 (For Comparison).	230	212

Table 9
Statistics, Operating Room
May 1, 1971 - April 30, 1972

Cardiac Catheterizations	No.	Plasmaphereses	No.
May	36	May	58
June	53	June	27
July	45	July	32
August	44	August	53
September	33	September	46
October	38	October	46
November	37	November	71
December	29	December	43
January	48	January	61
February	46	February	56
March	42	March	61
April	53	April	65
Total FY 1972 . . .	504	Total FY 1972	619
Total FY 1971 . . .	536	Total FY 1971	539

Number of Patients Going to Surgery
Classified by Institute

National Institute of Allergy and Infectious Diseases	55
National Institute of Arthritis and Metabolic Diseases.	75
National Cancer Institute	553
National Institute of Child Health & Human Development.	70
National Institute of Dental Research	3
National Eye Institute.	75
National Heart and Lung Institute	341
National Institute of Mental Health	7
National Institute of Neurological Diseases and Stroke.	347
Total FY 1972	1526
Total FY 1971	1638

Table 10
Diagnostic X-ray Procedures
Outpatient Nursing Service
May 1, 1971 - April 30, 1972

Month	Number
May	66
June	79
July	50
August	82
September	48
October	49
November	69
December	59
January	45
February	55
March	77
April	37
Total FY 1972	716
Total FY 1971	702

OUTPATIENT NURSING SERVICE
Table 1
NUMBER OF CLINIC VISITS
July 1, 1965-April 30, 1972

Month	FY 1966	FY 1967	FY 1968	FY 1969	FY 1970	FY 1971	FY 1972
July	1950	2088	2102	2525	2208	3112	3084
August	1974	2167	2595	2558	2343	2525	3199
September	2017	1941	2320	2233	2345	2784	3272
October	2025	1999	2256	2483	2593	3196	3139
November	1961	1959	2298	2201	2041	2637	3447
December	2061	1912	2199	2327	2466	2982	3200
January	2016	2115	2547	2518	2481	2857	2276
February	1913	1797	2423	2419	2302	2901	3713
March	2408	2331	2626	2592	2725	2922	4190
April	2156	2035	2480	2530	2913	3368	3589
May	2232	2147	2654	2608	2588	3406	*
June	2253	2252	2533	2625	2823	3280	*
TOTALS	24,966	24,743	29,033	29,619	29,828	36,070	*

* Statistics not available

OUTPATIENT NURSING SERVICE
Table 2
SPECIAL PROCEDURES PERFORMED
July 1, 1965-April 30, 1972

Month	FY 1966	FY 1967	FY 1968	FY 1969	FY 1970	FY 1971	FY 1972
July	274	475	634	989	1059	1588	2146
August	248	612	826	1040	987	1662	2731
September	280	576	683	1113	1207	1841	2103
October	264	419	643	1121	1391	1754	2024
November	403	472	617	991	1183	1720	2046
December	468	478	743	1091	1401	1873	1873
January	391	566	823	1101	1463	1927	2276
February	394	436	836	989	1407	2013	2198
March	511	661	821	1007	1541	1890	2616
April	384	557	874	955	1652	2428	2263
May	340	667	1076	1117	1378	1908	*
June	434	613	986	1019	1785	2201	*
TOTALS	4,391	6,532	9,562	12,532	16,450	22,808	*

* Statistics not available

OUTPATIENT NURSING SERVICE
Table 3 (Part 1)
CLINIC VISITS-ACUTE LEUKEMIA-CHEMOTHERAPY PROGRAM
Fiscal Years 1966-1972

SPECIAL AMBULATORY CARE PROGRAM

Month	VISITS							IV'S							PROCEDURES						
	1966	1967	1968	1969	1970	1971	1972	1966	1967	1968	1969	1970	1971	1972	1966	1967	1968	1969	1970	1971	1972
July	34	148	94	231	286	271	332	22	91	61	236	338	406	465	4	10	24	30	90	32	92
August	39	168	154	223	233	318	444	50	140	124	284	253	525	560	6	23	35	23	67	49	89
Sept.	59	98	131	236	282	343	366	55	83	84	341	400	575	412	8	19	17	52	100	35	76
Oct.	68	99	95	243	228	342	269	81	116	75	310	378	574	391	11	16	19	45	63	34	73
Nov.	36	97	125	205	247	260	338	58	119	128	259	433	430	486	11	11	16	28	56	42	65
Dec.	75	92	168	213	244	250	307	109	93	132	318	368	430	463	16	14	24	28	58	29	62
Jan.	82	109	136	173	245	384	301	42	82	99	271	367	523	505	12	17	29	20	67	49	87
Feb.	68	121	150	198	289	359	343	46	90	120	329	417	421	525	9	16	26	26	29	55	78
March	96	148	151	163	205	391	397	78	119	102	250	336	497	543	15	20	20	38	86	72	90
April	56	95	120	185	222	325	295	40	89	192	324	439	411	560	7	10	28	31	60	50	66
May	112	129	134	258	192	316	*	63	96	200	336	301	460	*	27	26	33	38	44	42	*
June	108	81	165	283	235	289	*	43	58	198	346	360	382	*	11	14	21	41	49	34	*
TOTALS	833	1385	1623	2611	2908	3848	*	687	1176	1515	3604	4391	5634	*	137	196	292	400	769	523	*

* Statistics not available

OUTPATIENT NURSING SERVICE
Table 3 (Part 2)
CLINIC VISITS-ACUTE LEUKEMIA-CHEMOTHERAPY PROGRAM
Fiscal Years 1966-1972

PATIENTS LIVING IN VICINITY

Month	VISITS 1966	1967	1968	1969	1970	1971	1972	IV'S 1966	1967	1968	1969	1970	1971	1972	PROCEDURES 1966	1967	1968	1969	1970	1971	1972
July	63	152	40	217	203	340	475	106	96	46	208	340	503	479	5	24	9	49	49	66	84
August	95	124	58	130	192	251	419	157	113	63	157	216	502	526	4	27	10	21	34	73	98
Sept.	127	96	18	186	226	310	356	342	75	24	263	297	634	451	1	24	4	43	43	69	64
Oct.	176	97	43	176	219	295	352	128	68	78	269	375	477	538	8	26	13	36	47	44	92
Nov.	213	88	40	179	198	313	505	166	67	61	333	338	456	580	18	16	6	28	57	71	135
Dec.	245	70	64	184	232	442	536	208	28	111	352	376	623	595	36	24	22	27	61	87	127
Jan.	176	71	139	228	287	342	521	159	34	138	404	490	486	639	27	17	17	44	52	55	119
Feb.	183	54	155	159	170	328	584	139	23	83	229	300	391	640	27	9	13	27	41	80	151
March	142	47	109	189	340	400	720	110	46	169	291	562	501	805	32	11	28	42	59	75	186
April	110	40	163	153	267	426	546	80	36	145	244	448	521	668	20	14	27	37	44	79	149
May	190	57	182	170	208	351	*	67	49	195	250	220	429	*	31	12	23	30	58	79	*
June	158	58	102	207	289	390	*	89	65	143	242	488	479	*	40	12	24	67	110	86	*
TOTALS	1878	954	1113	2178	2831	4188	*	1751	700	1256	3242	4450	6002	*	249	216	196	451	655	864	*

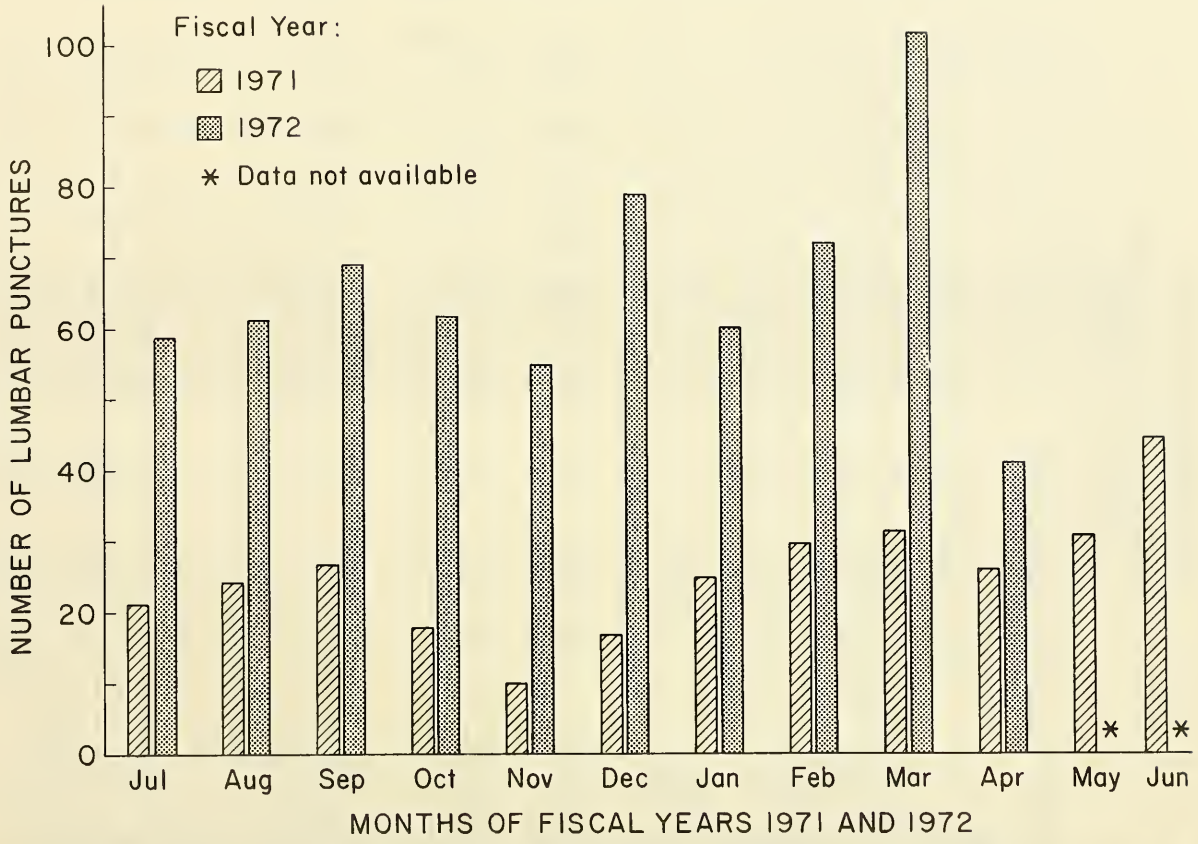
* Statistics not available

OUTPATIENT NURSING SERVICE
Table 4
CLINICAL VISITS BY CLASSIFICATION
INSTITUTES AND BRANCHES
July 1, 1971-April 30, 1972

INSTITUTES	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
NCI										
Immun.	23	4	1	3	0	1	2	3	1	0
Rad.	0	1	4	5	5	3	6	6	5	7
Surg.	169	106	136	137	114	159	160	168	201	180
Derm.	63	80	41	75	98	128	92	71	85	63
Solid Tum.	333	314	389	313	362	288	369	349	389	286
Solid Tum.-SACP	48	18	21	17	28	10	28	22	21	12
Acute Leuk.	482	521	510	459	563	530	530	546	704	589
Acute Leuk.-SACP	355	408	307	267	306	244	289	355	385	286
Metabolism	1	18	10	7	9	7	11	26	18	13
Other-SACP	8	7	6	0	0	1	6	1	4	0
NICHD	120	209	256	227	256	275	270	539	368	364
NINDS										
Surgery	89	78	74	71	42	43	78	77	98	65
Medicine	40	63	46	46	59	24	55	49	64	69
Ped. Neuro.	0	0	6	6	7	10	6	8	5	9
NIDR	6	2	2	6	0	0	4	1	5	1
NIMH										
Inpatients	93	110	122	132	126	126	183	178	198	144
Outpatients	381	309	338	387	409	380	353	334	407	406
NIAID	25	31	24	34	46	31	24	23	27	26
NEI										
Inpatients	64	128	115	129	98	87	158	115	127	98
Outpatients	96	150	165	155	188	132	185	187	221	155
SACP	3	0	0	0	0	0	12	0	0	0
EHS	0	0	0	0	0	0	0	8	22	26
NIAMD										
Digest.Dis.	0	0	0	0	0	4	4	4	6	7
Hematology	27	30	35	43	45	37	42	33	37	49
Arth.&Rheum.	115	69	82	75	69	75	100	56	105	105
Endocrinology	53	65	63	48	70	33	63	66	63	61
Metabolism	1	2	7	4	15	19	6	3	20	3
Ped. Metabolism	14	11	18	6	9	20	16	20	10	20
NHLI										
Endocrinology	90	29	29	79	41	53	47	22	60	57
Surgery	50	57	65	94	66	56	52	45	101	44
Cardiology	89	83	99	74	64	70	61	76	60	92
Special Studies	24	29	25	52	103	101	54	94	109	105
Metabolism	115	104	86	81	135	126	84	106	156	142
Exper. Therap.	85	114	150	96	80	89	81	94	93	94
EMPLOYEE HEALTH	10	16	27	22	24	30	28	27	15	10
MISCELLANEOUS	12	18	13	19	10	8	1	1	4	1
TOTALS	3,084	3,199	3,272	3,139	3,447	3,200	3,460	3,713	4,190	3,589

Fig. 1 COMPARISON OF NUMBER OF LUMBAR PUNCTURES PERFORMED IN FISCAL YEARS 1971 AND 1972

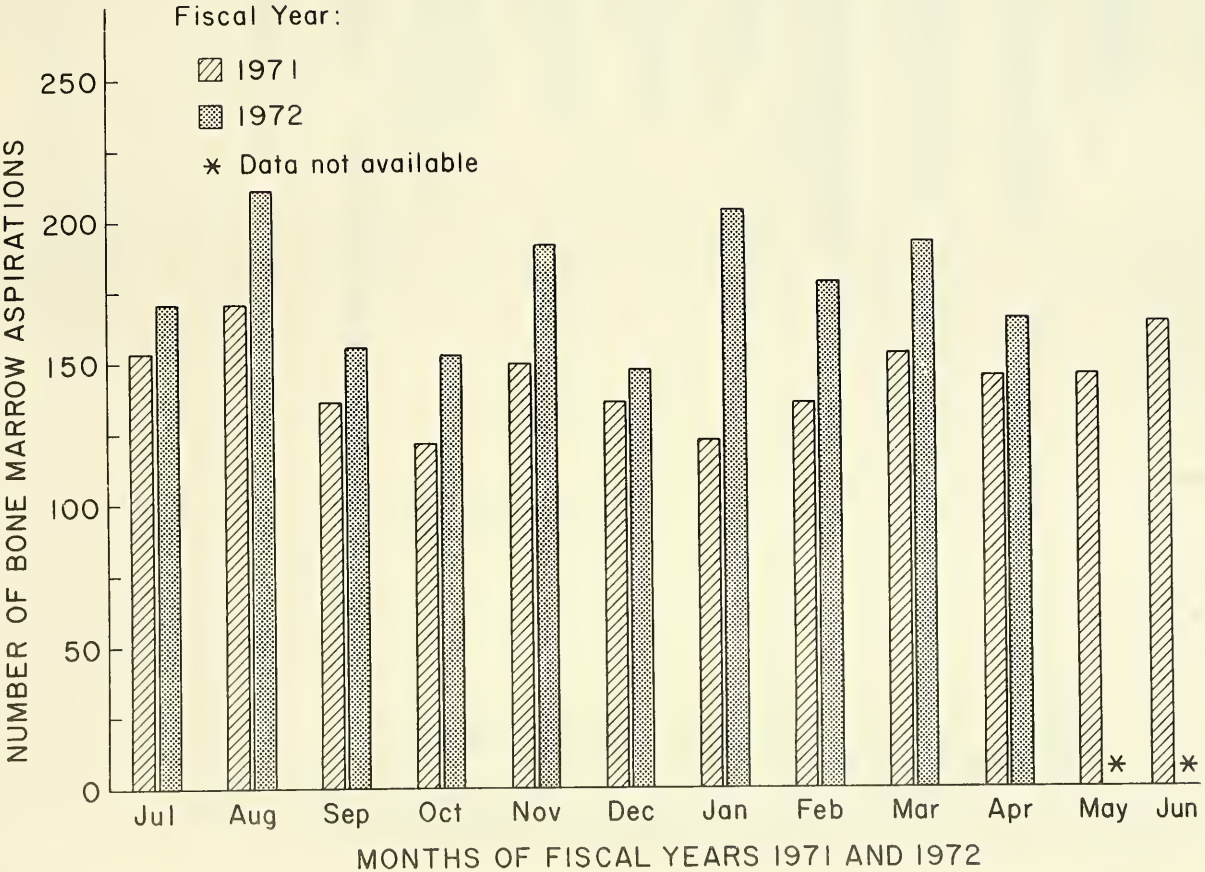
ACUTE LUKEMIA—CHEMOTHERAPY PROGRAM



NF-28

Fig. 2 COMPARISON OF NUMBER OF BONE MARROW ASPIRATIONS PERFORMED IN FISCAL YEARS 1971 AND 1972

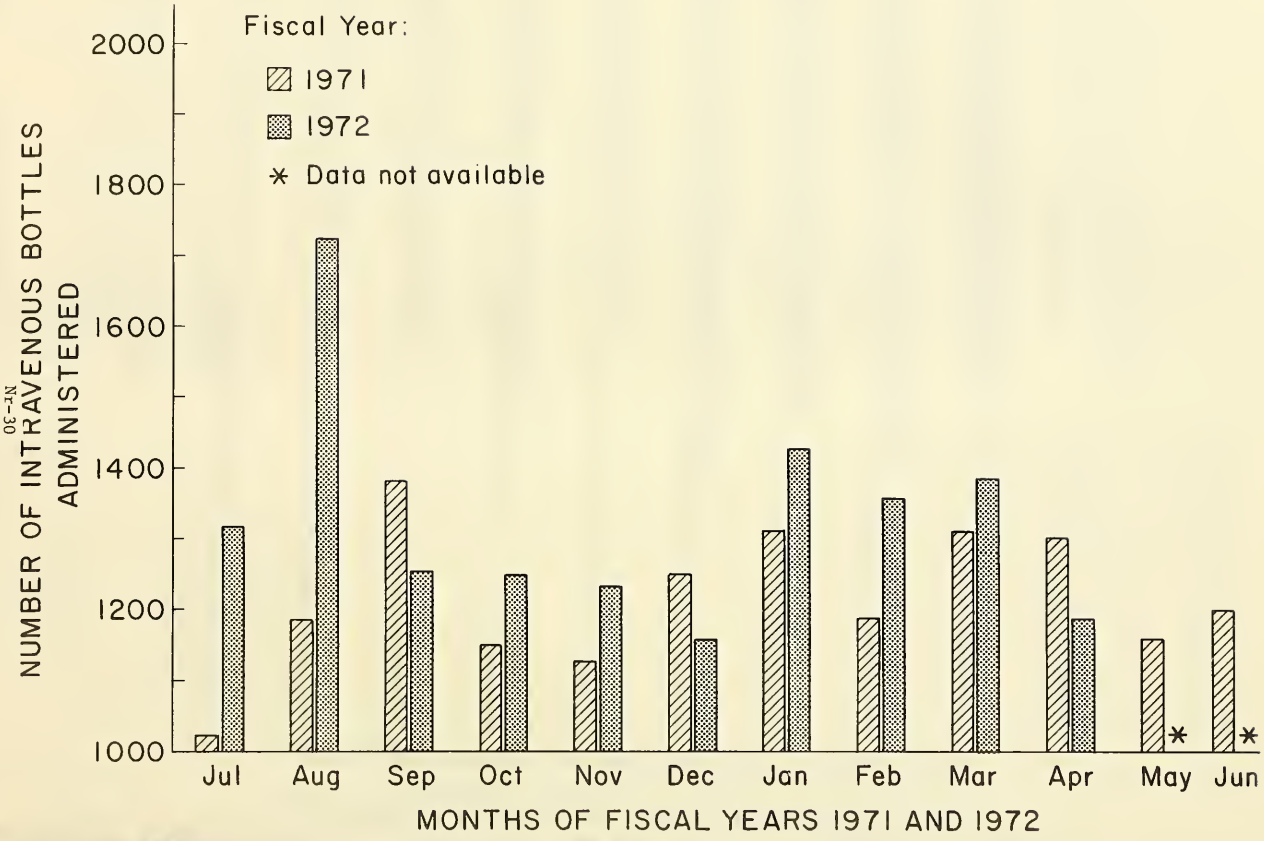
ACUTE LUKEMIA—CHEMOTHERAPY PROGRAM



NT-29

Fig. 3 COMPARISON OF NUMBER OF INTRAVENOUS SOLUTIONS AND ADMIXTURES ADMINISTERED IN FISCAL YEARS 1971 AND 1972

ACUTE LUKEMIA—CHEMOTHERAPY PROGRAM



July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
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NUTRITION DEPARTMENT

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OBJECTIVES

The major objective of the Nutrition Department is to meet the diet needs of the research programs and at the same time provide quality food service to all patients. The Nutrition Department strives to meet the research needs to the fullest extent attainable within the scope of the most modern knowledge and techniques of the science of nutrition.

In FY 1972, in addition to the above, the Nutrition Department had a second major objective--that of providing group instruction and interpretation of diets used in treatment of hyperlipoproteinemia to physicians and dietitians, and sharing techniques in dietary management that have been developed at the Clinical Center.

CONTRIBUTIONS TO THE CLINICAL RESEARCH PROGRAM

Because of the research mission of the Clinical Center, the role of its Nutrition Department is necessarily unique. Its contribution to the research program involves controlling patient dietary intake, as ordered by research investigators, and providing investigators with precise and complete patient intake data.

The percentage of patients who required calculated and quantitative diets or other individual attention was about the same for the current as for the previous year, but even so, it is still much higher that in the medical school teaching hospital.

In addition, the department has prepared booklets to give instruction to patients with one of the five types of hyperlipoproteinemia.

ACCOMPLISHMENTS, CHANGES AND IMPROVEMENTS

Twelve floor kitchens, a "Laminar Flow" kitchen food service, a formula room, the main kitchen, a storeroom, and the 3B (NCI) metabolic unit operated for a full twelve months of the fiscal year 1972. The 8th floor (NHLI) metabolic kitchen unit and the 9th floor (NIAMD) metabolic kitchen unit operated for eleven months. (These units were closed for one month for all staff vacations.)

One of the most important accomplishments of the Nutrition Department was the care and attention given to patients as individuals. Very ill patients were visited before each meal by Nutrition Department personnel and encouraged or coaxed to eat; diets were rewritten and recalculated to accommodate food

preferences and whims of patients; new patients were interviewed by dietitians to assure that the patients' food preferences were allowed in their diets; special foods were purchased and served to encourage eating. The department covets the inherent ability of a hospital food service department to boost the morale of the patient.

In FY 1972, the Nutrition Department served 253,709 meals. The department provided the following services for investigative purposes:

	Maximum/day	Minimum/day
Patients with fluid intakes controlled	50	28
*Patients with food intakes calculated	55	29
*Patients with food intakes measured and replaced	93	48
Patients with trays held for tests to be completed	88	46
Patients seen before meals	18	2
Aliquots prepared for laboratory	22	4
Diet changes	89	24

*This involves weighing at least three to six trays of food and two to three nourishments for each patient.

To service the research program, operation of the main kitchen required the provision of a wide variety of food items:

1. One hundred twenty-five to 133 food items appeared on the selective menus each day. In addition to those offered on the seven selective menus, 8 to 10 hot food items and 40 to 53 cold food items were prepared twice a day to meet research needs.

2. Five hundred to 600 food items were maintained on the storeroom shelves to meet the variety of needs on short notice as well as daily needs. Due to decentralization of purchase authority, the Nutrition Department has had to assume an even greater workload to assure the needed food items and supplies.

3. To assure the validity of the nutrition information furnished the investigator, the main kitchen operates with standardized recipes for each menu item and detailed specifications for each food item purchased.

The Nutrition Department also provided limited services to other departments and sections of the Clinical Center (Blood Bank, Patient Activity, Spiritual Ministry, Admissions and Follow-up, Employee Health, Occupational Therapy, and Plasmaphoresis Service).

The department operated for the year under the terms of the negotiated agreement between NIH and the AFGE Lodge 2419 (April 25, 1970).

Participation in EEO and Upward Mobility Programs was encouraged throughout the department and by the end of the fiscal year 8 staff members were

participating in adult education programs and 10 were participating in Federal City College Upward Mobility Program.

During FY 1972, Nutrition Department staff participated in the following education programs sponsored by NIH:

1. Four professional staff attended the 40-hour course for hospital supervisors.

2. Two professional staff attended the 40-hour advanced course for supervisors.

3. Two staff attended the 16-hour pre-retirement classes.

In addition, the following educational programs were sponsored by the Nutrition Department:

1. Monthly meetings were held by the Chief of the Nutrition Department for all department staff.

2. A 1-day laboratory experience for the new employees was developed and tested.

3. Three EDU-PAK tape sessions were held for professional staff.

4. Eight educational staff meetings were held for professional staff.

5. Kitchen manager staff attended classes on Techniques of Supervision, Menu Making, Merchandising and Procurement of Foods, and Safety and Sanitation conducted by the Martha Washington Vocational School.

6. Two 1-hour classes on Food Sanitation were held for the entire department staff.

7. A 2-day workshop on Lipid Metabolism was conducted for six dietitians working with Intervention Study of the National Heart and Lung Institute.

8. Two reorientation sessions were held for all new employees (each consisted of three 1-hour sessions).

9. Three 1-day workshops were held for the food service aides.

10. Two staff members attended a workshop on Establishing Convenience Food.

In addition, Miss Merme Bonnell, Chief of Patient Dietetic Service, served as a consultant to the National Heart and Lung Institute on its extramural site visits.

The department personnel actively participated in the NIH Equal Employment Opportunity Program. Mr. Coleman Chandler served as an NIH counselor and Mr. Jimmie Driscoll served as representative of the Nutrition Department to the Clinical Center EEO Council.

Group meetings were held with all members of the department once each month by the Chief of the Nutrition Department and the agenda was prepared by a committee of department staff. At each meeting, the EEO representative from the Nutrition Department, Clinical Center, was asked to report the subject matter covered at the latest Clinical Center EEO committee meeting.

MAJOR PROBLEMS ENCOUNTERED

The Nutrition Department's fluctuating and unpredictable workload continued to be one of its greatest problems. A wide variation occurred not only in total quantiy served, but in the variety and degree of restrictions ordered.

An even wider variation occurred in the types and kinds of diets requested. Clinical Center patients in general were more gravely ill than those of previous years and required more attention for their medical care needs as well as more dietary adjustment as part of their treatment.

Although cost figures were available for this report only through February 1972, increases in patient ration costs were evident. Increases in wage scales of all employees, as well as generally rising costs of raw food and other supplies were contributing factors. Limited utilization of two of the three metabolic kitchens for balance study diets and varying usage of beds in the Clinical Center also contributed to the high cost of Clinical Center patient rations.

Patient Ration* Costs

Fiscal Year:	1967	1968	1969	1970	1971	As of 2/29/72
Personnel	$12.34	$13.10	$15.10	$15.95	$16.96	$18.34
Raw Food	2.11	2.27	2.56	2.81	2.96	3.29
Sup. & Other	.40	.45	.54	.71	1.08	.86
Average Cost per Ration	$14.85	$15.82	$18.20	$19.47	$21.00	$22.49

*A ration is defined as the equivalent of three meals served, not patient day.

A proportion of personnel needed to provide research food service to patients was extremely high in all areas of the department. The workload was no less on Sundays and holidays than it was on weekdays. The requirements for the service at the evening meal were as great as the noon meal.

Since reseach diets were required on each service and floor, more nonprofessional staff members were required than would be common in another type of hospital food service.

In addition, this type of food service required the use of decentralized food service. In FY 1972, failure to provide an adequate number of employees in the nonprofessional category, meant that the dietitians were not free for conferences and planning of diets required by the medical staff. This reduced patient contact and endangered the general morale of the professional staff, with the potential of increased turnover. Lowered morale caused considerable unrest

and undercurrents and this curtailed the efficiency of the department as a whole.

Lack of decision concerning the personnel freeze and personnel reclassification which was undertaken in FY 1970 to comply with the new standards for food service workers, cooks, and bakers, issued by the Civil Service Commission, also caused a significant morale problem.

Purchasing in general presented some problems due to: (1) company mergers which in turn eliminated without notice such essential products as salt free bread; (2) changes in members of the Purchasing Department staff who had to be trained in the procedures of the department; and (3) strikes--making procurement of some items impossible.

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PHARMACY DEPARTMENT

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The Pharmacy Department is composed of 3 specialized Services plus the Office of the Chief.

OFFICE OF THE CHIEF

1. During the fiscal year, as in the recent past, the Office of the Chief was occupied primarily with the task of maintaining and even delivering additional service with further reduction of manpower. It was possible to achieve this only by critically examining operating policies and methods from the viewpoint of improving techniques and procedures and eliminating all non-essential functions or activities.

2. The Pharmacy Department's beginning drug inventory for FY 1972 was $281,992. This amount had been reduced to $212,287 by year's end. The excessively high inventory figure at the beginning of FY 1972 was due to the procurement of surplus drug stocks with additional funds provided by certain Institutes during the latter part of FY 1971. If generally accepted inventory management norms were applied to our particular situation, we would be vulnerable to possible criticism for maintaining an inflated drug inventory.

3. Procurement document processing and inventory handling functions continued to pose a sizeable problem to overcome. In order to eliminate some purchase document preparation, indefinite delivery type contracts were established in all possible situations requiring frequent and repetitive ordering. The use of a Flexowriter typewriter to prepare purchase documents enabled the supply clerks to process orders on a timely schedule without undue delays in getting the paperwork distributed to appropriate areas.

4. One major organizational and two supervisory personnel changes were effected during the past year. Radiopharmaceutical Service was administratively transferred from the Pharmacy Department to the Nuclear Medicine Department. A new Pharmacy Service Chief was appointed, and an Acting Chief of Central Sterile Supply Service was appointed to serve during the time the Chief of the Service is attending extramural training on a full-time basis. The loss to the Pharmacy Department of three pharmacists in the transfer of the Radiopharmaceutical Service has caused some difficulty in staffing on weekends. The 2 new personnel appointments were effected with minimum difficulty and continuity of supervision of the affected Services was maintained.

5. A lengthy report was prepared and submitted concerning certain drug purchasing activities during FY 1971 as requested by the Chairman Monopoly Subcommittee, Select Committee on Small Business, U. S. Senate. A knowledge of therapeutic categories of drugs was essential to prepare the report. Therefore, 6 man-days of professional time was used in compiling the information. Once again we have had demonstrated to us the need to establish a comprehensive automated drug information data base in the Pharmacy Department.

6. The Pharmacy Assistant trainee position in the Pharmacy Department was reactivated and a trainee was selected and began training. The previous Pharmacy Assistant trainee successfully completed the training period and obtained a position with the Food and Drug Administration.

7. The Office of the Chief initiated efforts to devise means to more accurately reflect Department activities in terms of workload statistics. The problem of equitably measuring and accounting for workload activity became crucial in the latter part of FY 1972. Such statistics are essential for reliable projections of the Pharmacy Department's capabilities with respect to proposed new and different program objectives which may become future Clinical Center missions.

PHARMACY SERVICE

1. The Pharmacy Service was responsible for:

   a. Filling drug requisitions for inpatients
   b. Filling prescriptions for both inpatients and outpatients
   c. Extemporaneous compounding of all intravenous additive solutions used in the Clinical Center
   d. Bulk compounding of noncommercially available formulations of drug products
   e. Maintaining investigational drug dispensing records

2. Pertinent Statistics

   a. Total number of bottles of sterile intravenous additive solutions compounded increased 22% over the previous fiscal year (due primarily to change to individual bottles for intermittent therapy).
   b. The total number of prescriptions filled increased 21% over the previous fiscal year.
   c. The number of requests for O.D. service increased 21% over the previous fiscal year.

3. Major Problems and Changes

   a. Due to inability to keep up with the tremendous increase in intravenous additive preparation workload, Pharmacy Service was compelled to change the procedure for mixing intermittent therapy solutions in late 1970. Thus, whenever possible, a single bottle containing a 24-hour supply of solution was mixed instead of several smaller bottles to be administered at intervals. Although

the solution was equipped with a buret chamber administration set which allowed exact volumes to be measured, medication measurement errors occasionally occurred.

After a year's period using multiple dose bottles, it was decided to change back to individual dose bottles in the interest of patient safety. Since 50 ml. is the smallest volume commercially available, the change to individual dose bottles presented a problem when a total volume of less than 50 ml. was required per dose of medication. This problem was overcome through negotiation with a solution manufacturer to prepare a 20 ml. size solution specifically for the Clinical Center.

Although we had been forced to discontinue the preparation of individual dose bottles because of the additional volume of work required, in FY 1972 we were able to handle the additional workload created by limiting volume manipulations to certain specific predetermined amounts. Also, the Soabar label printing machine was replaced with an IBM magnetic card Selectric typewriter, which resulted in a more versatile and efficient labeling operation with fewer labeling errors.

b. Officer of the Day requests increased 21% over the past fiscal year. Pharmacists providing this night coverage are not compensated for this duty and must function at their regular assignment the next day even though they may, at times, get only a few hours of sleep. With the continued increase in requests for service during weekend and night periods, a permanent night shift may have to be considered in the near future.

c. With receipt of a copy of the duplicate doctor's order sheet from 2-East, 13-East, 9-East, and Outpatient Nursing Service, the Pharmacy was able to fill (in addition to I.V. additive orders, and pass and discharge medications) all investigational drugs on an individual patient basis as opposed to floor stock. This resulted in a considerable increase in time required to process, fill, and maintain drug profiles of these orders. However, if the National Institutes of Health is to comply with the regulations, the Clinical Center must change its present policy of distributing investigational drugs as floor stock and begin filling all investigational drugs on an individual patient basis. Once again, the Pharmacy Department was not given any additional support for the start of this work.

d. A number of changes in the regulations of the Comprehensive Drug Abuse Prevention and Control Act of 1970 required that the Pharmacy Department change the policy of ordering, dispensing, and record-keeping of narcotics and controlled drugs in the Clinical Center. In addition, the pharmacy instituted unit dose dispensing of controlled drugs for ease of accounting and for reuse of returns. Further, the Act required that complete records must be maintained and an inventory of all controlled drugs be conducted every 2 years.

4. Accomplishments and Significant Contributions

a. A duplicate copy of the doctor's order sheet was implemented on 3 nursing units and one clinic in the Clinical Center. The pharmacy was able to fill all orders for I.V. additive solutions, pass and discharge medications, and investigational drugs directly from the duplicate copy, thus doing away with transcripted orders and prescription blanks. The use of the sheet also guaranteed that pass and discharge medications would be written in the chart if orders were to be filled by the pharmacy. Also, the need for all investigational drugs to be ordered and filled on an individual patient basis was made possible by the use of the duplicate doctor's order sheet. In the past, the doctor refused to rewrite the order on a prescription blank for the individual patient because it required too much time.

b. By using the duplicate doctor's order sheet, an individual patient medication dispensing system was instituted for the Leukemia Service. This involved the removal of all investigational drugs as floor stock from 2-East, 13-East, and Outpatient Nursing Service-West, and required the extemporaneous preparation of sterile vials with drugs for intrathecal injection and the prefilling of syringes for I.V. push, I.M., and S.C. administration of investigational drugs.

c. The cardiac arrest cart was completely revised by the Pharmacy Service. This involved the addition or deletion of considerable quantities of drugs or central sterile supplies. Selection of what should be retained in the cardiac cart was made by pharmacy personnel, nursing personnel from the Heart Nursing Service, and heart physicians designated by Clinical Director, NHLI, as responsible for all cardiac arrest procedures. The most important feature of the new cardiac arrest cart is the inclusion of prefilled syringes. This allowed for a faster and more efficient drug delivery system during emergency procedures.

d. A program was initiated to insure "stat" delivery of additional drug supplies that might be needed during a cardiac arrest emergency.

e. Unit dose packaging of controlled drugs was instituted in the Clinical Center. This type of drug packaging aided nurses and pharmacists in maintaining better control of drugs in the hospital.

f. A finder index was prepared which lists all drugs, chemicals, and supplies stocked by the pharmacy and their locations. This was a significant help for pharmacists serving O.D., weekend, and holiday duty, and who are assigned in Services other than the Pharmacy Service.

g. A new I.V. drug information and procedure book was prepared and the

data referenced. This manual will be published and the data made available to other hospitals in the country.

5. Proposed Future Objectives

a. Implementation of the duplicate doctor's order sheet throughout the hospital.
b. Conduct an analysis of the ramifications of instituting an individual patient dispensing system, using the copy of the duplicate doctor's order sheet for all investigational drugs used in the Clinical Center.
c. Conduct an analysis of the data processing necessary to produce inventory and patient record reports (drug profiles) on investigational drugs as dispensed via item b.
d. Introduce the concept of unit dose on one selected nursing unit and evaluate its effects on the total medical and nursing staff.
e. Revise and update the procedure manual for the Pharmacy Service.

CENTRAL STERILE SUPPLY SERVICE

1. The Central Sterile Supply Service was responsible for processing and issuing sterile and clean supplies used in the administration of medications, treatment of patients, research projects, and developmental activities in the various patient areas, specifically:

a. Sorting, cleaning, and inspecting reusable supplies and instruments; assembling and wrapping trays and sets.
b. Processing linen which involved the preparation of sterile surgical packs and the distribution of clean surgical linen.
c. Sterilizing packs, trays, sets, instruments, utensils, etc.
d. Storing and issuing clean and sterile commercially available disposable supplies and reprocessed supplies and instruments.

2. Pertinent Statistics

a. Requisitions filled increased 5%, distribution of fluids increased 12%, and trays and sets prepared decreased 29%.
b. Turnover rate of personnel was 40%.
c. Ten of the 28 employees in Central Sterile Supply Service attended some type of schooling or Upward Mobility program, representing an average of 300 manhours lost per month by the Service.

3. Major Problems, Changes, and Improvements

a. Comments with reference to the above statistics. The decrease of 29% in trays and sets prepared was attributed to the Service's continued efforts to introduce and use more disposable items. As new and improved trays and sets became available, they were evaluated as to possible replacement for our current reusable items. The evaluation, workup, introduction, and educational aspects of each item took from 6 weeks to 3 months.

High personnel turnover rate represented a loss of 12 employees--2 entered the Clerk-Typist Training Program, 1 became a Pharmacy Trainee, 1 transferred to the Nursing Department, 1 transferred to NINDS, 3 retired, and 4 resigned.

Of the 10 employees attending school on work time--4 attended Upward Mobility College, 1 attended pre-Upward Mobility College, 3 attended basic adult education, 1 attended Montgomery College, and 1 attended graduate school full time at George Washington University. The time away from the job created a burden on the rest of the employees who had to carry an additional workload.

b. Major problems in CSSS contined to be with personnel. In addition to the high turnover rate of personnel and the large number of employees attending Upward Mobility program during their workday, 4 employees were on extended sick leave for 45 days or more.

c. The expiration dates of items processed by CSSS was shortened from 6 months to 6 weeks. This resulted in large numbers of trays and sets being returned to CSSS more frequently for reprocessing which included a complete rewrapping procedure. The Pharmacy Department plans to conduct studies to re-confirm the shelf-life data reported in the literature in light of the problems this change has created.

d. In order to centralize the storage and issue of all types of equipment for loan throughout the hospital, the responsibility was transferred to the Nursing Department. CSSS, however, continued to clean and repair certain items of equipment.

Accomplishments and Significant Contributions

a. Job restructuring: CSSS jobs were redesigned and career ladders created. Restructuring of the journeymen medical aid positions and the creation of 2 medical aid coordinator positions resulted in a grade elevation for 19 employees. The 2 supply clerks were also upgraded from grade 4 to 5.

b. Introduction of disposable linen into the operating rooms and other areas of the hospital that use the reusable misty green linen was accomplished this past year. Acceptance of disposable linen was a slow process, and disposable gowns were the only item fully implemented in the Main Operating Room. However, the Diagnostic Radiology Department, which used approximately 30% of the linen prepared by the CSSS, was completely converted to the use of disposable linen.

c. The introduction and total acceptance of a number of disposable items enabled the CSSS to reduce their personnel staff by 2 people: This can be attributed to the disposable linen used by Diagnostic Radiology Department and the use of disposable wall suction and underwater drainage bottles.

d. A number of essential items were revised, updated, and developed, such as the Major Pack used in the operating room, Cardiac Catheterization Tray, and a disposable Protective Clothing Pack for the laminar flow rooms.

5. Proposed Future Objectives

a. Develop a quota system for CSSS items sent to the different nursing units and throughout the hospital, specifically for trays and sets which are over ordered, lost, or returned in large numbers because of the short expiration dates.

b. Continue to develop the exchange cart system to include other nursing units, such as 10-North and the Cath Labs. The carts are currently in operation and successfully used on the 10-East nursing unit and the 13-East laminar flow rooms.

c. Further explore the use of disposable linen in all of the operating rooms. The Chief of the Surgical Nursing Service is highly in favor of disposable items and was working with the Acting Chief of the CSSS in slowly introducing disposable linen to the doctors during FY 1972.

d. A job analysis and flow charting of the various functions of CSSS jobs will be undertaken in order to attempt to improve on the efficiency of the entire CSSS operation.

PHARMACEUTICAL DEVELOPMENT SERVICE

1. Responsible for:

a. Registration and control of all investigational drugs
b. Formulation and development of clinical dosage forms
c. Assay and quality control of investigational drugs and formulated products used in patients
d. Preparation of analytical data sheets for submission to FDA and DBS.

2. Pertinent Statistics

a. 3.61% increase in work requests
b. 71.37% increase in the number of units formulated, developed, and issued
c. 43% increase in the number of double-blind studies prepared and issued
d. 67% increase in the number of investigational drugs registered

3. Major Problems, Changes, and Improvements

a. Comments with reference to the above statistics: a 71% increase in the number of units developed and issued was due essentially to the high speed automatic capsule filling machine purchased 2 years ago.

This machine enabled the PDS to undertake capsule projects that formerly were not possible because of the large number of capsules required by the clinical investigators.

b. Since the introduction of the Upward Mobility College program, the PDS had to do without a secretary for approximately 1 day a week. This required either a professional or technical member of the PDS staff to perform secretarial tasks during her absence.

c. The renovation of the formulation and product development area scheduled for FY 1972 should be completed as scheduled.

d. The auxiliary air conditioning unit that supplied both the analytical and production areas had to be replaced. The unit was replaced with an old unit of smaller capacity. The unit may not meet the requirements of the renovated production area, and a new larger unit may be required in FY 1973.

4. Accomplishments and Significant Contributions

a. A large number of special and involved double-blind studies were prepared. These studies not only involved formulation and development work, but in many instances required analytical data sheets be prepared and submitted to the FDA. Some of the double-blind studies prepared are as follows:

Vitamin A Acid Psoriasis Study
Vitamin C Cold Study
Intrathecal Methotrexate Study
Smell Study
I.V. Cyclophosphamide Study
Provera Study
T.A. Study (Torticollis-Amantadine Study)
Zoster Immune Globulin Study
Timed-treatment Hypertension Study
Cholestyramine Type II Coronary Intervention Study

b. This year, all National Institute of Mental Health single-blind studies, known as the NIH Compound series, were recoded to maintain the integrity of the blind studies. This project involved a substantial manufacturing and relabeling effort on the part of the staff.

c. The Pharmaceutical Development Service was cited in at least 16 papers published, or in press, for their assistance in the formulation, development, and manufacture of the drug products used in the studies. Without the preparation of these drug products, the studies could not have been carried out.

d. The staff of the Pharmaceutical Development Service was directly involved in the following projects which resulted in authorship:

(1) A study to determine the best vehicle for the intrathecal administration of some cancer drugs. See publication. (2) A stability study of ampicillin in varying concentrations commonly used in the Clinical Center was carried out in both Dextrose 5% in Water and Sodium Chloride Injection. Results showed that ampicillin was stable for approximately 24 hours in the varying concentrations used in Sodium Chloride Injection, but was stable for only 4 hours in Dextrose 5% in Water. See publication. (3) A study involving the identification of crystals found in patients receiving high doses of 6-Mercaptopurine. Urine samples containing the crystals were identified and the mechanism of action postulated. See publication.

e. The services of the analytical unit of the Pharmaceutical Development Service were utilized more frequently during the year to identify various unknown medications in the possession of patients at the Clinical Center. Pharmaceutical Development Service, in many instances, collaborated with the Laboratory of Chemistry, NHLI. The analytical unit also assayed a number of commercial products whose identity and composition was questioned by physicians at the Clinical Center.

f. The Service was called on many times during the year for their pharmaceutical research and development expertise and assistance in many projects outside the National Institutes of Health and in other government agencies. One such project involved the Pharmaceutical Development Service to act as drug consultant and to render quality control for the manufacture of all mineral supplements to be used in the Sky Lab Spacecraft Project as part of the N.A.S.A. program.

5. Proposed Future Objectives

a. To revise Pharmacy Department policy on the ordering and dispensing of investigational drugs in the Clinical Center, thus requiring all investigational drugs to be dispensed on an individual patient basis.

b. To work toward the use of an automatic data processing system to produce the necessary inventory and patient records on all investigational drugs dispensed from the Pharmacy Department.

c. To set up a quality control system for all bulk chemicals utilized in the products manufactured by the Services of the Pharmacy Department.

d. To set up a closer alliance with the NCI Drug Research and Development Branch with reference to the use of cancer compounds used in the Clinical Center.

PROFESSIONAL ACTIVITIES

Troy D. Ballew

Attended Annual Meeting of the Tri-State Hospital Association, Washington, D. C., January 1972

Gary C. Collins

Attended Federal Services Pharmaceutical Seminar and The Association of Military Surgeons Pharmacy Section Meeting in Washington, D. C., December 1971
Attended Annual Meeting of the American Pharmaceutical Association, Houston, Texas, April 1972

Ural M. Copple

Attended Medical Management Institute sponsored by IBM in Washington, D. C., March 1972

Joseph F. Gallelli, Ph.D.

Member, United States Pharmacoepia Committee of Revision, 1972
Member, Chemotherapy Contract Review Committee, 1971-72
Contributing Editor, Drug Intelligence, 1971-72
Reviewer for the Journal of Pharmaceutical Sciences, 1971
Attended Sixth Annual Midyear Clinical Meeting of the American Society of Hospital Pharmacists, Washington, D. C., December 1971
Attended Annual Meeting of the Tri-State Hospital Association, Washington, D. C., January 1972
Attended Annual Meeting of the American Pharmaceutical Association, Houston, Texas, April 1972

Paul K. Hiranaka

Attended Conference on Bioavailability of Drugs Sponsored by NAS-NRC, FDA, and USP, Washington, D. C.
Attended Beckman Instrument Co. "Seminar on Analytical Methods of Drug Abuse Detection," February 1972

Thomas H. Hodges

Attended Conference on Computer-Based Information Systems in the Practice of Pharmacy conducted at the University of North Carolina, Chapel Hill, North Carolina, July 1971
Attended 78th Annual Meeting of the Association of Military Surgeons of the United States, Washington, D. C., December 1971
Attended Annual Meeting of the American Pharmaceutical Association, Houston, Texas, April 1972
Attended the Annual Joint Meeting of the Commissioned Officers Association and the Clinical Society of the U. S. Public Health Service, New York, New York, May 1972

Thomas H. Hodges

Attended Annual Meeting of the Tri-State Hospital Association, Washington, D. C., January 1972

Larry M. Kleinman

Attended Sixth Annual Midyear Clinical Meeting of the American Society of Hospital Pharmacists, Washington, D. C., December 1971
Attended Conference on Bioavailability of Drugs Sponsored by NAS-NRC, FDA, and USP, Washington, D. C., November 1971
Member, Ad Hoc Group for the Development and Production of Parenteral Dosage Forms for Clinical Investigation (NCI).

Mary L. Pengelly

Attended Federal Services Pharmaceutical Seminar and The Association of Military Surgeons Pharmacy Section Meeting in Washington, D. C., December 1971

William H. Peterson, Jr.

Attended American Society of Hospital Pharmacists Institute of General Practice of Hospital Pharmacy in San Diego, California, September 1971
Attended American Society of Hospital Pharmacists Sixth Annual Midyear Clinical Meeting in Washington, D. C., December 1971
Attended American Management Association's Basic Systems and Procedures Course in Atlanta, Georgia, February 1972

Frederick G. Pfeiffer

Presented a paper at the Sixth Annual Midyear Clinical Meeting of the American Society of Hospital Pharmacists, December 1971

Joseph B. Summey

Attended the Sixth Annual Midyear Clinical Meeting of the American Society of Hospital Pharmacists, December 1971

Joseph A. Tangrea

Attended Sixth Annual Midyear Clinical Meeting of the American Society of Hospital Pharmacists, Washington, D. C., December 1971

Lawrence A. Trissel

Attended the Sixth Annual Midyear Clinical Meeting of the American Society of Hospital Pharmacists, December 1971

PUBLICATIONS

Bagley, C.M., Canellos, G.P., Young, R.C., Gallelli, J.F., and De Vita, V.T.: Clinical Trials with Intravenous Imidazole-4-carboxamide-5-[3, 3-bis (2-chloroethyl)-1-triazeno] (NSC-82196). Cancer Chemother. Rep. In press.

Duttera, M.J., Gallelli, J.F., Kleinman, L. M., Tangrea, J.A., and Wittgrove, A.C.: Letter to Editor. Lancet 1:540, 1972.

Duttera, M.J., Carolla, R.L., Gallelli, J.F., Gullion, D.S., Keim, D.E., and Henderson, E.S.: Hematurea and Crystallurea After High Dose 6-Mercaptopurine Administration. New Engl. J. Med. In press.

Hiranaka, P. K., Frazier, A.G., and Gallelli, J.F.: Stability of Ampicillin Solution. Am. J. Hosp. Pharm. 29:321, 1972.

Pfeiffer, F.G., and Covington, T.R.: Clinical Pharmacy--Definitions, Objections, and Application in Community Pharmacy. Illinois Pharmacist. 35: (1) 23-26, 1971.

Table 1

Pharmacy Department Statistical Data

	1968 (Fiscal)	1969 (Fiscal)	1970 (Fiscal)	1971 (Fiscal)	Est. 1972 (Fiscal)
PHARMACY SERVICE					
Outpatient prescriptions	27,011	34,413	39,052	41,667	48,700
Inpatient prescriptions	11,816	3,179	2,741	3,068	5,600
I.V. additives (bottles)	46,522	55,912	72,982	*47,258	57,700
Drug vials reconstituted by I.V. Additive Unit	42,786	56,154	62,876	54,110	40,000
Other items	254,911	239,996	256,424	256,998	238,000
Prepackaged items	47,531	42,094	41,191	44,436	32,000
Total	430,577	431,748	475,266	447,537	422,000
PHARMACEUTICAL DEVELOPMENT SERVICE					
Units developed and issued	111,306	155,896	174,079	381,404	653,625
Requests processed	1,318	1,301	1,146	1,414	1,465
Investigational drugs registered	403	447	500	412	687
New investigational drugs processed	126	113	101	100	107
PHARMACY OFFICER OF THE DAY					
Number of requests for service	4,545	5,395	7,158	4,850	5,875
MAIL-OUT PRESCRIPTIONS					
Number of prescription packages mailed	778	833	828	779	870

*Decrease in number of I.V. bottles was due to the filling of multidose I.V. bottles as opposed to single dose bottles done in previous years.

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

REHABILITATION DEPARTMENT

CC-38
Serial No.

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July 1, 1971 through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
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INTRODUCTION

During the period July 1, 1971, through June 30, 1972, as in previous years, the Rehabilitation Department performed its basic function of patient treatment, using recognized, effective measures of physical and occupational therapy. Again, a large number and wide variety of tests and measurements were carried out for Institute physicians primarily in evaluation of functional ability and progress, but also in connection with diagnosis and determination of effectiveness of drug and other therapy.

SERVICES PROVIDED BY THE REHABILITATION DEPARTMENT

Physical Therapy Service

1. Tests and measurements:
   Manual muscle evaluation
   Quantitative muscle testing
   Joint range of motion measurements
   Electrodiagnostic testing, including chronaxie measurements and strength-duration curves
   Self-care evaluation (activities of daily living)
   Progressive resistance exercise evaluation
   Pulmonary function studies
   Girth, length, and volumetric measurements
2. Heat, including:
   Superficial--hot packs, infrared, paraffin bath, whirlpool
   Deep--shortwave diathermy, microwave, ultrasound
   General body heat--Hubbard tank
3. Therapeutic exercise:
   General exercise--passive, active assistive, active, and resistive
   Muscle re-education
   Ambulation training
   Pre- and postoperative thoracic surgery program
   Pre-prosthetic, and prosthetic training
   Training in self-care activities
   Breathing exercises and postural drainage
4. Miscellaneous
   General and local application of ultraviolet light
   Cervical traction
   Pelvic traction
   Application of splints and casts to maintain joint in good anatomical and functional position

Instruction to patients and family in home care program
(application of heat, exercise, use of self-care aids)
Fitting and dispensing canes and crutches
Prescription and procurement of correct shoes, braces, corsets, splints, and prostheses

Occupational Therapy Service

1. Physical and functional restoration:
   Maintain or regain joint range of motion
   Increase muscle strength
   Improve coordination
   Develop work tolerance
   Train in activities of daily living
   Train in development of substitute skills (visual loss)
   Train upper extremity amputee in use of prosthetic device
   Make splints and provide self-care aids

2. Evaluation and testing:
   Activities of daily living, including self-care and homemaking evaluation
   Evaluate children's developmental levels
   Record patient's behavior patterns for use in evaluation of patient's reactions in specific research studies
   Pre- and postoperative performance tests for stereotaxic patients
   Periodic functional activity tests of patients on drug studies

3. Psychological adjustment:
   Substitute constructive interests for the insecurity and anxiety which may develop during research studies
   Provide normal developmental learning experiences for children
   Promote relaxation and acceptance of bed rest
   Aid in resocialization

4. Psychiatric adjustment:
   Provide activities in relation to needs of research studies and report observations of patient's behavior
   Aid patient in making acceptable social adjustment
   Aid patient in preparing for community living and carrying employment and home responsibilities
   Place patient in industrial therapy program as a step toward post-hospital employment

5. Prevocational exploration:
   Explore skills, interests, and work habits
   Increase work tolerance
   Maintain special skills required by patient's job
   Make recommendations on patient's performance and aptitudes for use in vocational planning

Office of the Chief

1. Evaluation of Institute patients referred for physical medicine and rehabilitation; prescription and supervision of therapy.
2. Electromyography, including conduction velocity, and repetitive stimulation studies.
3. Speech consultation.

PROGRAM DEVELOPMENT AND CHANGES

Continuing Programs

1. Patients with parkinsonism or dystonia musculorum deformans on the L-Dopa study on NIMH were evaluated and treated in Physical and Occupational Therapy Services. Reports of these evaluations and treatments were periodically reviewed by the NIMH Senior Investigator.

2. The Occupational Therapy Service continued to provide supportive programs directed toward aiding Laminar Air Flow Room patients in adjusting to their confinement. Some patients were in these rooms for extended periods of time. Physical Therapy provided general exercises to maintain strength, endurance, and joint range of motion while patients were so confined.

3. Both Physical Therapy and Occupational Therapy Services continued to use the abbreviated forms of pre- and post-operative tests developed with Dr. John Van Buren, NINDS, for patients having stereotaxic surgical procedures. As indicated in last year's Annual Report, the tests were abbreviated and their validity was proven. This testing has been continued using the revised tests.

4. Members of the Occupational Therapy Service continued to be called as consultants to the nursing staff on NINDS in making adaptations of protective helmets for certain children with cerebral seizures and other items needed for better management and care of individual children with special problems.

5. Evaluation and treatment of patients with cystic fibrosis included pulmonary function tests, bronchial drainage, breathing exercises, posture exercises, and instruction to parents or patients in a home treatment program. The total program included use of slant boards and hand vibrators which allowed the pre-teen and teenage patients to apply their own treatment at home and to be less dependent on others. Several slant boards and vibrators were purchased by the Pediatric Metabolism Branch, NIAMD, and were dispensed on loan by our Service to specific reliable patients of the age groups mentioned. Parents of smaller children have purchased their own equipment for the treatment application.

6. We continued to use plaster of paris casts to correct and/or prevent joint deformities, primarily with the rheumatoid arthritis patients. We also used isoprene to make various types of splints (primarily functional splints) for neurology patients, and cosmetic shoulder splints for patients with forequarter amputation.

7. Pulmonary function tests continued to be performed on patients with a variety of diagnoses. These included myasthenia gravis, muscular dystrophy, Parkinsonism and a number of other neurologic conditions; histoplasmosis, cryptococcal meningitis, fever of unknown origin and a number of other infectious conditions; and patients who had thoracic and abdominal surgery. Referrals for pulmonary function testing came from all Institutes with the exception of the National Institute of Dental Research.

8. Pre- and postoperative evaluations and treatment of patients with spinal arteriovenous malformations were carried out. The pre-operative program included manual muscle evaluation, quantitative muscle testing, and evaluation of functional abilities. Post-operatively, the program involved muscle re-education and strengthening exercises, joint range of motion exercise, transfer activities, and when feasible, ambulation and gait training with or without assistive devices and braces.

9. Dr. David M. Fried, Chief, Rehabilitation Department, with Mr. Mario Salvanelli, Chief, Physical Therapy Service, presented a 2-hour lecture May 3, 1972, on Rheumatoid Arthritis, emphasizing the concept of total patient care, to the first-year class of the Howard University Medical School.

10. Electromyography, measurement of nerve conduction velocity, and repetitive nerve stimulation continued as services of the Rehabilitation Department. From July 1, 1971, through June 30, 1972, (May and June are estimated), Dr. Tillye Cornman, Assistant Chief, Rehabilitation Department, saw 86 patients for the electromyographic study of a total of 252 muscles and 74 patients for measurement of conduction velocity of 302 nerves. Total number of patients per Institute: 102 (30 NINDS, 27 NCI, 11 NIAMD, 17 NHLI, 12 NIAID, 3 NEI, 1 NIMH, 1 EHS).

New Programs

1. During the school year Occupational Therapy staff supervised high school age patients on NIMH in their studies in Home Arts to enable them to earn credit while here. This was carried on in collaboration with the school teacher assigned to the Clinical Center. It is a particularly important part of these students' rehabilitation to enable them to keep up with their peers.

2. Members of the Occupational Therapy Service staff participated in weekly or bi-weekly interdisciplinary conferences on NEI and NIAMD and on two units of NCI. These conferences proved to be very helpful in integrating the various treatment programs.

3. A knee synovectomy protocol was developed by this department in collaboration with Dr. Robert Aptekar of NIAMD for the purpose of evaluating long term results of knee synovectomy in rheumatoid arthritis.

4. As part of a research project, quantitative muscle tests are being performed on patients with Sjogren's syndrome prior to and after they are on steroids to determine changes in muscle strength.

Reduction in Programs and Space

The Occupational Therapy Service continued to meet patient care obligations despite loss of its space on the fourth floor. The impact will become greater with future loss of the staff due to lowered personnel ceilings. Physical Therapy Service gave some of its space to enable Occupational Therapy Service to continue patient treatment.

STAFF TRAINING

For Rehabilitation Department Personnel

1. Staff members attended medical ward rounds, conferences, and lectures conducted by Clinical Center and visiting medical staff.

2. In-service training for the Rehabilitation Department personnel included weekly viewing of video-tapes prepared originally during in-service training for NINDS personnel. These covered a wide variety of subjects dealing with neurological conditions and disorders, testing and treatment of these patients. Five movies were also shown by Occupational Therapy Service centered on the disabled homemaker. These were: Research and the Handicapped Homemaker, The Homemaker with Arthritis, with Incoordination, with Weak Upper Extremities, and with Use of One Hand. These movies were also shown to nursing, ancillary medical, administrative staffs.

3. Miss Setella Nottage, Secretary, Occupational Therapy Service, enrolled in the Upper Mobility Program of the Federal City College earning 9 credit hours each quarter. Mr. Robert Massey, Physical Therapy Assistant, continued to attend classes four hours weekly in the NIH Education Program arranged by Personnel Management.

4. Mrs. Nancy Hurley, Occupational Therapist, attended the Gestalt Therapy Workshop given by NIMH for three days in July.

5. Miss Ruth Singleterry, Assistant Chief, Occupational Therapy Service, Mrs. Mary Duncan and Mr. Arthur Plumstead, staff physical therapists, attended the one-week course, "Introduction to Management," for supervisors presented at NIH.

6. In February 1972, Mrs. Cynthia Board, staff occupational therapist, started work on her Master's degree in Human Development and Child Study at the University of Maryland. She attended night school.

7. Mrs. Judith Schreiber, Occupational Therapist, attended the seminar on "Psychoanalytic Principles for Therapists Using the Arts" given by the Washington Psychoanalytical Society during May and June, 1972.

8. The majority of staff members of the Department attended the two-day "Hand Symposium" March 24 and 25, 1972, at the University of Maryland under the auspices of the Maryland Chapter of the American Physical

Therapy Association and the Maryland State Department of Health and Mental Hygiene. Mr. Plumstead was co-chairman of the symposium, which was attended by over 200 physicians, surgeons, physical therapists, and occupational therapists.

9. Mr. Arthur Plumstead attended a one-week course from March 6 to 10, 1972, in New Orleans entitled "Newer Concepts in Respiratory Care," sponsored by the Louisiana State Respiratory Disease Association.

10. The following lectures based on the Textbook of Orthopedic Medicine: Diagnosis of Soft Tissue Lesions by James Cyriax were given to Rehabilitation Department personnel by individual members of the staff: Referred Pain, Neuritis and Pressure on Nerves, Diagnosis of Soft Tissue Lesions, Rheumatological Aspects of Soft Tissue Lesions, and Soft Tissue Neck lesions.

By Rehabilitation Department Personnel

1. Orientation to the function and scope of the Rehabilitation Department was given to new members of the Social Work and Spiritual Ministry Department and Patient Activities Section by Dr. Fried, Miss Mary Beach, Mr. Salvanelli and Mr. Lamont B. Smith. Coordination of programs of the various Departments was discussed. Similar orientation was given to a group of Red Cross Volunteers.

2. Monthly tours were conducted for new nursing service personnel through the Physical Therapy and Occupational Therapy Service with orientation regarding program function and scope.

3. Several Normal Volunteers and one Junior Red Cross Volunteer assisted in Occupational Therapy and Physical Therapy Service for the purpose of learning more about these professions before deciding to enter training for them.

4. A meeting of the Maryland Chapter of the American Physical Therapy Association was held at the Clinical Center on February 16, 1972. The program was centered on our programs in Physical and Occupational Therapy Services and how they differ from those found in the usual general hospital. Mr. Salvanelli, Mr. Smith, Mr. Arthur Plumstead, and Miss Beach participated.

5. Mr. Plumstead gave a tour of the Rehabilitation Department and talk on rehabilitation to a group of inner city youngsters from the "Widening Horizons" organization in July of 1971.

6. Mr. Plumstead gave a tour of the Rehabilitation Department on August 4, 1971 to three officials of the National Cystic Fibrosis Foundation and explained our respiratory program.

7. A group of seven West German prosthetists-orthotists spent a half day on November 5, 1971, in the Rehabilitation Department discussing braces and prostheses. They were hosted by Miss Singleterry and Mr. Salvanelli.

8. Mr. Plumstead began formal training of nurses on 6 West nursing unit (Heart Surgery) with lectures and demonstrations of bronchial drainage and respiratory care of patients. Training will be on a continuing basis of 6 West personnel are replaced.

PARTICIPATION OF PERSONNEL IN PROFESSIONAL ACTIVITIES OFF THE CAMPUS

1. Miss Mary Beach, Chief, Occupational Therapy Service and Mr. Mario Salvanelli, Chief, Physical Therapy Service, participated in meetings of the PHS Therapist Career Development Committee. Miss Beach served as Executive Secretary of the Committee until October; Mr. Salvanelli for the remainder of the year. Miss Beach also served as a panel member of the Washington Interagency Board for Occupational Therapists and Occupational Therapy Assistants, U.S. Civil Service Commission.

2. Miss Beach attended the annual conference of the American Occupational Therapy Association, at Cleveland, Ohio in November of 1971.

3. Mrs. Judith Schreiber, Staff Occupational Therapist, volunteered her services once a week as occupational therapist at the Bache Memorial Free Clinic, a walk-in clinic located at St. John's Episcopal Church, Bethesda, Maryland.

4. Miss Beach served as Financial Management Chairman of the D. C. Occupational Therapy Association and as a member of the Association's Executive Board.

5. Mr. Salvanelli and Mr. Smith attended a one-day instructional session at the University of Maryland Medical School on December 11, 1971 in preparation for the Maryland University Physical Therapy Student Internship Program.

6. Dr. Fried addressed the medical staff of the V.A. Hospital in Coatesville, Pennsylvania, on March 27, 1972. The subject was "Rehabilitation in Arthritis."

7. Mr. Plumstead attended a Health Care Workshop sponsored by the Maryland State Department of Health and Mental Hygiene, in March of 1972, at which the physical therapy aspect of nursing home standards was discussed.

PUBLICATIONS

Mr. Lamont B. Smith, RPT, and Mrs. Louise Bezdek, OTR, assisted in the periodic evaluation of patients for the NINDS research study, "A Study of Central Monoamine Metabolism and Therapeutic Trial of Levadopa in Amyotrophic Lateral Sclerosis," reported in Archives of Neurology, October 1971, Vol. 25, by Drs. Mendell, Chase and Engel.

STAFFING AND PERSONNEL CHANGES

Office of the Chief

1. Appointments: none
2. Resignations: none
3. F. Y. 1972 Staffing Pattern:

Chief, Rehabilitation Department	1
Assistant Chief, Rehabilitation Department	1
Secretary	1
	3

Physical Therapy Service

1. Appointments:

   Mr. Mario L. Salvanelli, Therapist Director, was appointed Chief, Physical Therapy Service, effective 7/31/71.

   Mr. Lamont B. Smith, Therapist, was appointed Assistant Chief, Physical Therapy Service, effective 7/31/71.

   Mr. Hal Egbert, Assistant Therapist, reported for duty 9/22/71.

2. Retirements: Miss Vida Jo Niebuhr, Therapist Director, effective 7/31/71.
3. Resignations: none
4. Transfers:

   Mr. Richard Hetherington, Senior Assistant Therapist, transferred to US PHS Hospital, Staten Island, New York, effective 8/31/71.

5. F. Y. 1972 Staffing Pattern:

Chief, Physical Therapy Service	1
Assistant Chief, Physical Therapy Service	1
Staff Physical Therapists	4
Physical Therapy Assistant	1
Secretary	1
	8

Occupational Therapy Service

1. Appointments: none
2. Resignations: none
3. Retirements: none
4. Personnel Actions:

   Mrs. Judith Schreiber on leave from 8/9/71 to 1/24/72; on part-time basis (30 hours per week) 1/24/72 to 2/2/72; on full time since then.

   Mrs. Nancy Hurley on full-time employment to 1/9/72; on part-time basis (32 hours per week) since then.

5. F. Y. 1972 Staffing Pattern:

Chief, Occupational Therapy Service	1
Assistant Chief, Occupational Therapy Service	1
Staff Occupational Therapists	5
Secretary	1
	8

PHYSICAL THERAPY SERVICE

Table 1: Statistical Report, by Month, Fiscal Year 1972 *

	No. of Working Days	No. of Different Patients Treated		No. of Patient Visits		No. of Treatments Given	
		IP	OP	IP	OP	IP	OP
July 1971	21	130	34	637	81	1164	203
Aug.	22	146	39	686	125	1266	253
Sept.	21	148	33	727	109	1451	212
Oct.	19	139	21	678	72	1334	147
Nov.	21	126	33	682	83	1287	181
Dec.	21	106	29	630	56	1153	132
Jan. 1972	21	139	29	825	63	1537	123
Feb.	20	139	47	919	106	1849	218
Mar.	23	147	42	850	129	1835	264
April	22	124	42	906	97	1633	241
May	20	123	37	619	70	1139	151
June	22	123	45	684	70	1142	134
Total	253	1590	431	8843	1061	16790	2259
Total		2021		9904		19049	

* Estimated for April, May and June

PHYSICAL THERAPY SERVICE

Table 2: Number of Different Patients Treated by Months and Institutes, Fiscal Year 1972 *

MONTH	NHLI	NIAMD	NCI	NIAID	NINDS	NIMH	NIDR	NEI	NICHD	TOTAL
July 1971	30	31	31	13	47	10	-	-	2	164
Aug.	24	44	42	11	50	10	1	-	3	185
Sept.	17	37	44	16	50	13	2	-	2	181
Oct.	19	23	35	19	52	9	1	-	2	160
Nov.	15	29	39	12	49	10	2	-	3	159
Dec.	18	28	40	6	32	9	-	-	2	135
Jan. 1972	26	37	39	9	42	11	1	-	3	168
Feb.	27	38	45	8	54	11	1	-	2	186
Mar.	27	33	44	9	55	15	4	-	2	189
April	24	21	36	14	61	8	1	-	1	166
May	20	19	42	10	60	9	-	-	-	160
June	26	25	36	18	47	11	-	-	5	168
Total	273	365	473	145	599	126	13	-	27	2021

* Estimated for April, May and June

PHYSICAL THERAPY SERVICE

Table 3: Number of New Patient Admissions, by Institute; Comparative Statistics, Fiscal Years 1968-1972 *

Fiscal Year	NHLI	NIAMD	NCI	NIAID	NINDS	NIMH	NIDR	NEI	NICHD	TOTAL
1968	140	274	264	46	328	4	1	-	-	1057
1969	175	236	256	47	322	15	3	-	-	1054
1970	164	236	290	85	322	29	1	-	-	1127
1971	176	252	338	119	415	32	-	10	4	1345
1972	197	250	311	91	439	49	12	-	17	1366

* Estimated for April, May and June

PHYSICAL THERAPY SERVICE

Table 4: Comparative Statistics,
Fiscal Years 1968-72 *

Fiscal Year	No. of Different Patients Treated	No. of Patient Visits **		No. of Treatments Given ***	
1968	1668	10,378	(1704)	19,473	(442)
1969	1641	10,495	(1771)	19,254	(505)
1970	1730	11,170	(2084)	21,981	(427)
1971	1909	9,461	(1990)	17,496	(636)
1972	2021	9,904	(2227)	19,049	(654)

* Estimated statistics for April, May and June

** Visit cancellations in parenthesis

*** One time visits only in parenthesis

PHYSICAL THERAPY SERVICE

Table 5: Percentage of Inpatients Treated (Average)
** Exclusive of NIMH, NIDR, NEI and NICHD
Comparative Statistics, Fiscal Years 1968-72*

Fiscal Year	NHLI	NIAMD	NCI	NIAID	NINDS	**ALL
1968	7.7	27.8	13.0	11.6	32.1	16.8
1969	9.9	28.1	10.7	13.7	40.9	17.8
1970	10.4	28.5	11.9	14.4	39.2	18.0
1971	10.6	26.2	14.1	20.7	47.0	19.2
1972	12.6	28.1	15.1	16.8	53.7	20.5

*Estimated for April, May and June

PHYSICAL THERAPY SERVICE

Table 6: Consultant Visits,
Fiscal Year 1972 *

Orthotist:	42 visits for 74 patient examinations
Shoe Fitter:	36 visits for 55 patient examinations

* Estimated for April, May and June

PHYSICAL THERAPY SERVICE

Table 7: Number of Patient Evaluations by the Physiatrists, Fiscal Years 1968-72 *

Fiscal Year	NHLI	NIAMD	NCI	NIAID	NINDS	NIMH	NIDR	NEI	NICHD	TOTAL
1968	110	187	199	39	350	3	-	-	-	888
1969	66	178	199	46	337	14	2	-	-	842
1970	81	157	196	64	337	32	1	-	-	868
1971	69	167	204	72	332	27	-	5	1	877
1972	85	166	153	58	397	42	10	-	6	917

* Estimated for April, May and June

OCCUPATIONAL THERAPY SERVICE

Table 8: Fiscal Year 1972
Number of Different Patients Treated by Months and Institutes including Outpatients and SACP*

	NCI			NEI	NHLI	NIAID	NIAMD		NICHD		NIDR	NIMH	NINDS		TOTALS		
	IP	OP	SACP	IP	IP	IP	IP	OP	IP	OP	IP	IP	IP	OP	IP	OP	SACP
July 1971	68	26	28	10	107	30	48	-	16	1	0	35	49	--	363	27	28
Aug.	75	27	45	8	107	34	55	-	30	1	1	37	57	1	404	29	45
Sept.	85	27	43	9	89	28	51	-	18	1	1	36	50	1	367	29	43
Oct.	79	30	34	11	113	39	43	-	18	-	1	33	55	-	392	30	34
Nov.	67	32	34	12	88	45	44	-	17	-	6	38	45	2	362	34	34
Dec.	70	31	30	11	82	38	38	-	14	-	4	37	34	1	328	32	30
Jan. 1972	67	33	36	14	92	33	49	-	12	-	1	36	34	-	338	33	36
Feb.	81	39	36	22	96	27	53	-	14	-	3	46	40	-	382	39	36
March	73	37	37	19	113	39	47	2	15	-	5	42	46	-	399	39	37
April	96	32	49	19	106	34	49	-	1	-	-	35	46	15	386	47	49
May	78	29	48	16	98	40	48	-	7	-	-	35	51	10	373	39	48
June	80	24	30	18	105	45	44	-	8	-	-	39	49	-	388	24	30
Totals	919	367	450	169	1196	432	569	2	170	3	22	449	556	30	4482	402	450

*Estimates for April - June 1972

Table 9: Fiscal Year 1972
Patients Admitted to Occupational Therapy including Outpatients and SACP*

	NCI			NEI	NHLI	NIAID	NIAMD		NICHD		NIDR	NIMH	NINDS		TOTALS		
	IP	OP	SACP	IP	IP	IP	IP	OP	IP	OP	IP	IP	IP	OP	IP	OP	SACP
July 1971	39	6	20	0	67	10	27		13	1	-	9	31	-	196	7	20
Aug.	49	4	32	6	76	17	37		19		1	8	33	1	246	5	32
Sept.	46	6	29	4	55	15	27		9		-	7	24	1	187	7	29
Oct.	38	5	18	7	71	22	21		13		1	5	28	-	206	5	18
Nov.	29	4	24	5	53	24	24		10		5	15	26	2	191	6	24
Dec.	35	1	18	3	41	9	14		5		-	3	18	1	128	2	18
Jan. 1972	42	3	23	9	69	19	38		9		1	6	17	-	210	3	23
Feb.	47	10	21	9	54	11	30		9		2	12	21	-	195	10	21
March	42	3	22	6	62	21	22	2	8		4	7	24	-	196	5	22
April	42	3	33	7	72	10	25		1		-	5	24	2	186	4	33
May	36	7	22	5	43	25	25		7		-	8	32	1	181	7	22
June	45	3	16	10	72	28	23		4		-	10	26	2	218	5	16
Totals	490	55	278	71	735	211	313	2	107	1	14	95	304	10	2340	66	278

*Estimates for April - June 1972

OCCUPATIONAL THERAPY SERVICE

Table 10:Fiscal Year 1972
Summary Report by Institutes of Number of
Patients Treated, Number of Treatments and Hours*

Institutes	Number of Different Patients Treated			Number of Patient Treatments			Number of Treatment Hours		
	IP	OP	SACP	IP	OP	SACP	IP	OP	SACP
NCI	919	367	450	2164	380	926	1546	336	965
NEI	169	---	---	682	---	---	556	---	---
NHLI	1196	---	---	3026	---	---	1797	---	---
NIAID	432	---	---	477	---	---	717	---	---
NIAMD	569	2	---	1982	3	3	1236	3	3
NICHD	170	3	---	460	3	---	287	1	---
NIDR	22	---	---	66	---	---	46	---	---
NIMH	449	---	---	4822	---	---	7288	---	---
NINDS	556	30	---	1623	30	---	1427	20	---
Totals	4,482	402	450	15,302	416	929	14,900	360	968

*Estimates for April - June 1972

OCCUPATIONAL THERAPY SERVICE

Table 11: Comparative Statistics
Fiscal Year 1968-72
Patient Treatments and Treatment Hours*

Fiscal Year	Number of Different Patients Treated			Number of Patient Treatments			Number of Treatment Hours		
	IP	OP	SACP	IP	OP	SACP	IP	OP	SACP
1968	5,148	189	254	29,497	391	611	26,867	329	587
1969	5,072	119	420	32,756	113	1,092	27,881	110	1,054
1970	5,243	194	466	26,520	230	1,045	21,019	219	1,016
1971	4,654	396	532	21,373	459	1,146	18,938	412	1,049
1972	4,482	402	450	15,302	416	929	14,900	360	968

*Estimates for April - June 1972

OCCUPATIONAL THERAPY SERVICE

Table 12: Fiscal Year 1972
Percentage of In-Patients Treated*

	NCI	NEI	NHLI	NIAID	NIAMD	NICHD	NIDR	NIMH	NINDS	TOTALS
July 1971	38.4	66.6	66.8	52.6	64.8	53.3	-	66.0	66.2	56.9
Aug.	41.2	61.5	57.5	56.6	66.2	75	50	68.5	70.2	57.3
Sept.	43.8	56.6	56.3	49.1	70	50	20	76.5	66	55.5
Oct.	46.7	45.8	64.9	55.7	70.5	46.1	16.6	61.1	67	57.7
Nov.	37.4	66.6	57.5	62.5	69.8	53.1	100	63.3	59.2	54.9
Dec.	39.5	64.7	65	68	63.3	41.1	-	62.7	50	54.9
Jan. 1972	32.5	50	57.1	56.9	65.3	31.6	20	59	46.5	47.7
Feb.	39.5	73.3	58.1	49.9	63.8	41.2	60	69.8	58.8	53.7
March	38.8	57.5	64.9	52.6	61.8	35	71	53.1	59	53.1
April	45.9	73	66.6	45.3	62	43.3	-	60.3	61.3	54.2
May	45.6	57	63.1	64.5	68.5	33.3	-	52.2	68	57.3
June	46.5	69	64.4	59	60	20.5	-	68	59	56.2
Monthly Averages	41.3	61.8	61.9	56.0	65.5	43.6	20.6	63.4	60.9	55.0

*Estimates for April - June 1972

Table 13: Comparative Statistics Fiscal Years 1968-72
Percentage of In-Patients Treated*

Fiscal Year	NCI	NEI	NHLI	NIAID	NIAMD	NICHD	NIDR	NIMH	NINDS	TOTALS
1968	47	_	72.7	47.7	74.6	_	82	88.8	66	62.8
1969	47.1	_	76.1	58.2	72.6	_	56.1	92.8	75.3	64.1
1970	47.9	86.4**	72.0	68.7	73.6	_	35.2	57.5	66.7	63.8
1971	42.9	76.5	59	66.6	69.5	36.3+	8.7	64.2	57.8	56.5
1972	41.3	61.8	61.9	56.0	65.5	43.6	20.6	63.4	60.9	55.0

* Estimates for April - June 1972
** In FY 1970 Prior to April 1, NEI patients included in NINDS figures.
\+ In FY 1971 on July 1st, 21 patients in Occupational Therapy were transferred from NCI to NICHD

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

SOCIAL WORK DEPARTMENT

CC-39
Serial No.

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July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

SOCIAL WORK DEPARTMENT

CC-39
Serial No.

GOALS AND ACCOMPLISHMENTS

The purpose and goals of the Clinical Center Social Work Department were to facilitate the hospital's responsibility for the psychosocial aspects of medical and research care through helping patients and families deal more effectively with personal, social, psychological, and emotional problems affecting the course of their illnesses. Social work, a profession with a major commitment to maximizing the social functioning of individuals, had a special charge for emphasizing psychosocial care as the core of its day-to-day work with patients and families.

Social, emotional, and cultural factors can impede or enhance patients' participation in medical care. During FY 1972, social work collaboration with other professions and disciplines about these factors added to the understanding of patients' needs and increased the effectiveness of the hospital's total medical research and social work programs.

Based on its knowledge of the effects of the health care systems on patients and families, the Social Work Department helped to identify significant problems created by the system and facilitated changes that would make the hospital more responsive to patient needs.

SELECTED HIGHLIGHTS OF CLINICAL SERVICE

Helping Patients Incorporate Therapeutic Regimens

A number of patients on the Allergy and Infectious Diseases Section must learn to incorporate into their lives and thinking, not only illness itself, but they must also adjust to long-term chemotherapeutic regimes, using drugs that are dangerous, unpleasant, or both. Therapies such as steroids, immunosuppressive agents, Amicar, and Amphotericin -B are in themselves sources of stress. Yet it is important that the patient succeed in coming to terms with them. He will be on medication for an extended period, perhaps indefinitely. Inability to live with a medication may result in the patient's acting out by forgetting his medication or altering his dosage -- maneuvers potentially dangerous in the management of his illness. He may also fail to deal with the effect of medication upon his total pattern of living.

Much social work activity in FY 1972 was centered on helping patients find ways to live not only with the illnesses but, also with the therapeutic regimens. In this undertaking there were several important factors to be considered: the gravity of the illness, the patient's motivation to get well, his personality as a whole, the level of his anxiety, the quality of his trust in medical caretakers, and the integrity of his sense of self-worth. Goals of social work treatment differed, patient by patient, depending on all these factors. Thus, with some patients, the goal of casework contacts was to educate and reassure so patients were strengthened in dealing with fears of side-effects such as low red or white blood count, or with feelings about changed appearance such as moon facies, or loss of hair. In other instances, the social worker's aim was to break through the denial of illness so that the patient could cease resisting therapy. Other patients needed to be confronted with the way in which a basic personality pattern, such as unwillingness to accept help or direction from others, was thwarting medical treatment. Still others needed help in assessing the meaning of emotional side-effects and in devising strategies to live with these factors.

Crisis-Oriented Short-Term Treatment of Surgical Cardiac Patients

The social work goal for patients undergoing cardiac surgery was to help them and their families maintain sufficient ego strength and coping resources to achieve mastery of the experience. The adult patients, usually with family support, had made the choice of risking life to achieve greater self-fulfillment and social effectiveness. The parents of children had to make the same decisions for their youngster.

There was generally hope for improvement following surgery but the experience was accompanied by heightened anxiety. Frequently, all of the patient's energies were channeled to meet this threat and challenge to life. The worker drew upon her knowledge of patients' capabilities to cope with this experience, thereby supporting the patient's own drive toward health. It was necessary to have rapid access to these patients, as there was little time for preparation. There was heavy reliance on marginal clues in the presenting behaviors and the quality of interaction with family and clinical staff to gain some understanding of the patient as a person. The focus was on the patient's concerns in relation to surgery.

The social worker attempted to reduce the overwhelming fears of survival, to dilute the fears of the unknown by explaining and anticipating the stressful aspects of the operative and postoperative periods, to correct phantasies and distortions through clarification by both the surgeon and worker, to clarify the linkage between current stress and past life events if the anxiety was severely crippling, and to help patients and families lower feelings of guilt, tension and helplessness.

The anxiety of patients and families who had gone through the surgical experience increased at the time of discharge and during the first period at home. A planned consistent effort was made by the social worker to contact these patients by telephone ten days to two weeks following discharge to demonstrate continued interest and concern and to learn whether further supportive services were required.

Liaison with Community Agencies

Planning for needed care with local community agencies upon patients return to their home communities is complex. Because of the general fragmentation and lack of integration of resources, referral and follow-up activities require ingenuity and persistence on the part of the social worker. The Neurology, Eye, and Cancer Sections made extensive use of community agencies and many patients had multiple problems which could be met only through coordinating activites of several agencies.

In making a successful referral from the hospital to a community agency, the source of the referral was important, as was the receptivity and engagement of the agency. Most significant of all was the patient's motivation, including the ease with which he connected himself with the agency and the amount of change required of him in accepting the referral. These factors applied to all referrals, but were of special importance when change was involved entailing new expectations of the patient, as was frequently the case when referral was made for vocational rehabilitation, psychiatric treatment, or counselling.

The referral process began while the patient was still in the hospital. The social work objective was to interpret the agency to the patient, anticipate with him probable procedures, and help him deal with fear and resistance to this new undertaking. Patients being asked to consider psychiatric or counselling agencies, even when quite well motivated, were characteristically afraid that they had been labelled as emotionally disturbed or that the experience would be a punitive one. Often the worker helped by exploring the patient's feelings about his talks with the consultant or psychiatrist or the worker herself; if these were comforting, the patient often viewed them as samples of a good experience to come. Also to be dealt with was the patient's reticence in approaching a new organization. The worker eased the approach by reporting to the patient the feeling-tone of her exploratory telephone call to the agency, and by giving the patient the name of someone to ask for when he called for an appointment.

The exploratory call was an important piece of the referral process: staff members obtained facts about waiting lists, availability of various forms of therapy, and gave a preliminary verbal summary of the patient's situation. The summary was far more satisfactory than having to depend entirely on a written report.

The source of the referral determined certain activity: if the plan was initiated by worker with the patient, his physicians had to be kept informed; if the physician or the psychiatric consultant made the plan, social worker contacted the agency since follow-up contacts would then flow more easily. The worker made certain that written medical and psychiatric reports were forwarded promptly. A final piece of work was to ensure that the family physician had been reached and that he supported the referral plan.

Then follow-up activity began. Patients were asked to report on how the plan had worked or follow-up reports were requested from the agency. Using caution not to infringe on the patient's right to refuse a referral, social workers sometimes telephoned him to offer a further opportunity to work through concerns about the plan. This seemed to work especially well for patients who were attempting to begin a vocational rehabilitation program and whose lowered self-esteem and expectations of failure blocked carrying through on the referral. Patients in the process of beginning a psychotherapeutic experience seemed to benefit from an opportunity to express their misgivings or confusion and were able to accept the worker's suggestion that these feelings be shared directly with the therapist. A second type of follow-up involved the extension of continued emotional support on a regular basis after the patient had left the hospital. Preferable though it might have been for patients to receive such support through a local agency, in some cases this was not possible. Sometimes local resources were simply not available; in other situations the network of NIH relationships was a valuable support to the patient's sense of self-esteem and well-being.

Clinical Approach with Cancer Patients

The constant challenge to the social worker dealing with cancer patients was to help with significant social and psychological factors including their feelings of isolation, loneliness, fear, anger, and the reactive depressions engendered by impending death. These same feelings were experienced by family members and were frequently compounded by ambivalent feelings towards the patient which reactivated guilt. To prevent pathologic grief reactions, effort was made by the worker to reopen and explore areas of conflict. This strengthened family members' ability to deal with feelings of hostility, anger, and abandonment. Social workers also tried to lend swift, continual, and appropriate environmental and emotional support to both the patient and significant family members in order that their psychic energies could be channeled into the stressful task of cooperating with the treatment-research goals of the hospital.

In addition, constant vigilance was maintained to recognize the delicate diagnostic balance between "helping the patient to live" and/or "helping the patient to die," an inherent part of the life cycle. Often patients were confronted with psychiatric consultations and increased efforts on the part of ancillary staff to help them become "more outgoing" when, indeed, they were attempting to resolve their essential task of withdrawing from all that they had known and loved - so fundamental in their ability to die with relative integrity, peace, and dignity.

Selected Highlights of Indirect Service to Patients

Increased consideration was given this year to social work intervention directed towards the improvement of overall patient care through identification of problems in patient care and work with staff through appropriate channels toward change. For example, a communication gap between clinical care and research staff on the Endocrinology Branch of the

Heart Social Work Section, resulted in disruption of patients' optimal research participation. After the social worker identified the patients' conflicts and needs and shared these with both clinical and research staff as well as the Chief of the Service, new patient-oriented rounds with nursing staff and social worker and subsequent assignment of a psychiatric consultant to 8-East Unit resulted.

The worker on the Pediatric Leukemia Unit continued to serve as coordinator of weekly Interdisciplinary Staff Conferences for the clinical care staff of 2-East Unit and the West Wing outpatient department. These meetings provided an avenue for increased comprehensive patient care through the mutual exchange of information and a concerted staff approach to dealing with patients, staff, and administrative problems. A vital function was that of providing mutual support for staff on a highly stressful service.

Multidisciplinary conferences initiated by the social worker on the Eye Social Work Section continued, and the worker and clinical associate on Arthritis and Metabolic Diseases Social Work Section initiated weekly interdisciplinary meetings. The goal was to provide higher quality patient care through enhancing communication between members of the clinical care group.

The social worker, Surgery Branch, Neurology Social Work Section, was appointed by the Clinical Director of NINDS, as the first non-physician member, to its Clinical Review Committee. This committee met monthly to review and make recommendations concerning intramural clinical research projects which involved patients. This was a new role for a member of the department.

This year members of the department participated in broader Clinical Center programs. The Program Supervisor, Neurology Social Work Section, served as Equal Employment Opportunity Counselor and as a member of the Equal Employment Opportunity NIH Council. All four Program Supervisors completed the 40-hour Civil Service Management and Supervisory Course. The philosophy of giving attention to the human factors in hospital managment of Clinical Center personnel should indeed benefit patient care.

PROBLEM AREAS

1. The most serious problem continued to be lack of sufficient staff. On August 1971, after two years of attrition, the staff was finally reduced from 30 to 18 positions, including professional and clerical, as ordered in 1969. On March 7, 1972, the department's budgeted ceiling was reduced from 18 to 14, including professional and clerical. This quite clearly means significant retrenchment of service and program. The experience over the years has led to a depth and range of knowledge related to the complexity and constellation of problems associated with our patients who suffer from severe chronic illnesses. The most serious result of this staff reduction will be the hospital's lessened responsiveness to the social and emotional needs of patients and families.

This staff reduction will mean that the department can carry out its mandate in a very limited manner. The goal of trying to make a social work assessment of all patients and their situations will necessarily have to be abandoned. There will be a sharp curtailment of quantity and quality of service and the current emphasis on the preventive and rehabilitative approach will be diminished. Our concentrated work with children to alleviate the stress of illness and hospitalization to permit completion of developmental tasks and to find areas for achievement will be lessened. It will become less feasible to use the resources of the Clinical Center and the local community therapeutically to help our young adult patients hospitalized over long periods of time. Many of these patients suffer from a particularly stressful combination of handicap and deprivation. Their disease if not immediately life-threatening is apt to be life-shortening and vocationally handicapping; their home situations are troubled. It will no longer be possible to meet many of the physicians' requests for staffing of new programs or for participation in their research studies. Although the Clinical Center Director indicated his long term interest in Clinical Center departments pursuing their own research, this has already been nearly eliminated for our department. The student training program initiated two years ago will have to be terminated. Throughout the years the department has had a leadership role in the social work health field which it will be impossible to maintain. This reduction inevitably affects staff morale which in turn will influence the recruitment of new staff and retention of current staff.

2. The Special Ambulatory Care Program for Cancer patients continued to expand. As stated in previous reports there continued to be insufficient social work coverage and planned supportive service to meet the serious and extensive social and emotional problems of these patients and families. Their feelings of loneliness and isolation experienced in relation to their long stay away from home and community only reinforced the despair about their illnesses. This past year, most of the children on the Pediatric Leukemia Service remained in the Clinical Center for one or two weeks, and were discharged either home or to the Special Ambulatory Care Program before they were in remission. This early discharge of sick children created increased apprehension and stress for the children and parents, and increased the demand for social work services to help with the situational stresses inherent in the program. For those who returned home it was necessary to mobilize resources in the community to adequately meet the need.

3. The department's inability to provide sufficient service to the rapidly growing outpatient operation continued to be of concern. As mentioned in previous reports the present system of furnishing social work service to outpatients only on a referral basis is unsatisfactory. Requests from physicians tend to be limited to crisis situations. Ideally, a social worker should be present throughout the time many of the clinics are held.

4. The limited private interviewing space in the outpatient department and in the B-3 Radiation area does not protect the patients' and families' rights to privacy and confidentiality. The lack of a physician's office or any space on 6-West Unit, the Surgical Service of the NHLI, for interviews

by our staff, and for surgeons to talk with patients and families privately, increases an already stressful situation and is thereby a dysfunctional situation created by the hospital itself. It is most difficult for families to display or discuss their grief following a patient's death when they are in the middle of a crowded solarium surrounded by other patients and families. The use of former solaria for research equipment, monitors, computers, and physicians' offices is another space infringement affecting the "life space" of our patients.

FUTURE OBJECTIVES

1. The major objective and challenge will be to achieve high quality comprehensive patient care with limited staff resources. Staff reductions will force a rethinking of priorities and development of new methods of staff deployment. Realistically, the philosophy of trying to "reach out" to every patient will be impossible to implement and selectivity regarding the provision of social work services will be required.

2. In the years ahead, it is hoped that it will be possible to increase the number of professional staff members to enable the department to carry out satisfactorily its full-range of responsibilities.

3. The physicians on the National Institute of Child Health and Human Development have already requested social work staff for their new Obstetrics Program where both the mothers and babies are considered "high risk." This will require additional staff.

SOCIAL WORK SERVICES RENDERED

Number of Patients Provided with Service in Various Categories

Each month the department reports on the number of patients and their family members served in four principal categories: (1) Preadmission - services between acceptance for admission to a project and Clinical Center outpatient or inpatient admission; (2) Inpatient - person occupying a bed in the Clinical Center; (3) Clinic - person under outpatient treatment who has neverbeen an inpatient; and (4) Follow-up - outpatient contact with former inpatient.

A summary of monthly totals of patients provided with social work services for the first 9 months of Fiscal Years 1971 and 1972 is presented on the following page.

A full-range of social work services was provided each month for an average of 431 inpatients and 256 of their family members (see Table 2, Column 2). Social work coverage was provided to an average of 75 percent of the inpatients present in the hospital from July 1971 through March 1972 (see Table 1). By way of contrast, the department had achieved an inpatient coverage figure of 89.4 percent for the same period of Fiscal Year 1969, 87 percent for Fiscal Year 1970, and 77 percent for Fiscal Year 1971.

Service was provided to an average of 112 outpatients each month (see Table 2, Columns 3 and 4); a 14 percent decrease from the average of 151 last year. An average of 307 family members of in- and outpatients were provided with social services each month (see Table 2), a figure about 26 percent lower than last year.

SUMMARY OF MONTHLY TOTALS
OF PATIENTS SERVED

Service Categories	FY 1971 Patients Served July 1970 - March 1971		FY 1972 Patients Served July 1971 - March 1972	
	Number	% of Total	Number	% of Total
Preadmission	36	0.7	30	0.6
Inpatient	4,005	74.2	3,881	78.9
Clinic	44	0.8	106	2.2
Follow-up	1,312	24.3	901	18.3
TOTAL	5,397		4,918	

Indirect Service to Clients

Table 3 presents a summary of staff time not used in providing direct services to clients but essential to the department's participation in the total treatment program. It does not include an account of the administrative time of either the department chief or assistant chief. Examples of activities involved are ward rounds, department committees and meetings, team conferences, nursing conferences, hospital program planning, professional meetings and community programs. A projection for the entire year of the figures presented in Table 3 indicates that the staff spent 4,385 hours in such activities. For the past three years the time spent on indirect service to patients and families has steadily declined and reflects a decrease in department activities such as staff education and a minimal investment in research activities.

NIH PATIENT EMERGENCY FUND

This Fund (formerly Patient Welfare Fund) administered by the department chief, continued to serve a crucial need in providing services and emergency funds for Clinical Center patients and families which could not be paid out of appropriated government funds. The Fund is financed by donations from former patients, family members, friends of patients and NIH employees. From 1953 through 1969, the Fund was also supported by regular contributions from the Recreation and Welfare Association out of income derived from its profit on vending machines. The Recreation and Welfare Association discontinued its contributions October 1, 1969. In

December 1971 when the Fund balance was $7,113.85, the Recreation and Welfare Association was requested to resume support in keeping with a previous agreement that the Association would contribute to the Fund when the balance fell below $8,000.00. The Recreation and Welfare Association appointed a committee to make a recommendation following further study of the Fund and their decision was still pending at the end of April 1972.

One special source of income is the annual gift from NIH employees at Christmas time under the "Davis Plan" whereby employees donate to the NIH Patient Emergency Fund in lieu of sending Christmas cards to fellow employees. The Christmas 1971 Davis Fund Drive was the most successful in its history and total gifts to the fund were $7,123.93.

During the first 9 months of Fiscal Year 1972, the five principal areas of expenditures from the Patient Emergency Fund and the amounts spent were as follows:

Special programs (unit parties, supplies, etc.)	$ 4,088.72
Patient transportation	1,728.45
Patient miscellaneous expenditures (telephones, clothing, special devices)	1,941.19
Basic necessities (small weekly spending allowance for patients without funds)	1,939.50
Allowance to relatives to assist with living costs while visiting Clinical Center patients	14,042.15
TOTAL amount spent (July 1971 - March 1972)	$ 23,740.01

Expenditures from the Fund have increased rapidly during the past two years (see "Total Withdrawn" Column, Tables 4 and 5). By way of camparison, the total amount spent from the Fund was $13,750.72 in the first 9 months of Fiscal Year 1970; $20,643.57 was spent for the same period in Fiscal Year 1971; and $23,740.01 for the first 9 months of this year (see Chart above).

The projected total expenditures from the Fund for the entire 12 month period of this Fiscal Year is $31,653.35 which will be the highest in its history.

As of March 31, 1972 (see Table 4) the Fund had a balance of $12,786.72 as contrasted to $20,168.56 at the same time a year before. The decrease in the Fund's balance of $7,381.84 reflected the marked rise in expenditures.

Several factors have been responsible for the continued rise in expenditures from the Fund. Escalating food costs and the increased cost of renting rooms in nearby homes for family members made it necessary to give most relatives without funds a larger allowance to live in this area. By agreement with the Clinical Center Executive Office, the Fund has

markedly increased its support for patient recreational costs in the Patients Activities Section. This year there was a substantial increase in this expenditure [$4,088.72 for the first 9 months of Fiscal Year 1972 as compared to $1,949.89 for the same period in Fiscal Year 1971 (see Table 5)]. Reports from the social work staff indicated that in general, lower income patients, many recently unemployed, have arrived in more acute financial stress these past couple of years than previously.

During the Fiscal Year 1972, 353 patients and family members were assisted by the Fund in meeting emergency situations when carefully documented inquiries indicated that no other source of help was available. This was approximately the same number as last year and as anticipated, the largest number of patients for whom assistance was provided came from the Cancer and Heart Social Work Sections. The Fund was utilized when there was compelling need. In a number of situations, it was clear that patients would have left the hospital against advice or suffered severe emotional distress had we been unable to support the presence of a family member here during a time of medical crisis.

The Clinical Center Financial Management Officer completed an Internal Review Report of the Patient Emergency Fund in March 1972 and several recommendations for strengthening specific areas were implemented. The decreased balance of the Fund as of March 31, 1972 ($12,786.72) along with the increased expenditures of the Fund and an anticipated increase in the cost of living reinforced the need for the NIH Recreation and Welfare Association, Inc., to resume support.

STAFFING

At the close of the Fiscal Year, the department had 16 full-time and two part-time social workers, all of whom, with the exception of the Chief, carried heavy caseload responsibility. Clerical staff consisted of four full-time secretaries or clerk-typists and one part-time clerk-typist, a high school student from the "Stay-in-School Program." The department's professional positions were assigned as follows: Office of the Chief - 2; Cancer Social Work Section -5; Heart Social Work Section - 5; Arthritis and Metabolic Diseases Social Work Section - 2 full-time and 1 part-time (4 days a week); Neurology Social Work Section - 2 full-time and 1 part-time (3 days a week).

Mrs. Elizabeth Stem resigned from the Heart Social Work Section in August 1971 to move with her husband to a different city. In June 1971, the department was fortunate in being able to recruit three very competent and experienced social workers who quickly became integrated within their Sections. Miss Loretta A. Coughlin and Miss Eileen M. Holschuh joined the Heart Social Work Section, and Mrs. Ann J. Reuschel joined the Cancer Social Work Section.

Effective January 31, 1972, Mr. John F. Roatch, Chief of the Department, was temporarily assigned to the New Management Initiatives Team, Federal Assistant Review Task Force, Office of the Secretary, DHEW. During his

absence, the Assistant Chief, Miss Barbara A. Murphy, became Acting Chief. It was necessary to delegate her casework responsibility for the patients on the National Institute of Child Health and Human Development to Miss Roberta E. Peay, Chief, Heart Social Work Section.

STAFF DEVELOPMENT AND PROFESSIONAL ACTIVITIES

As in previous years, coordination of the administrative aspects of the department's work and clinical responsibilities was achieved mainly through the Chief's biweekly group meetings with the Assistant Chief and section chiefs. In addition, monthly individual conferences were held with each section chief to review the work of each section. Section chiefs or designated senior social workers provided consultation or supervision for all staff clinical work with patients and families.

Monthly staff meetings were used to keep staff members abreast of administrative matters affecting their work, reports of special projects, and presentations on current practice issues by various speakers. Guest speakers this year discussed a range of topics of professional interest including: "Impact of Adolescent Turmoil on Parents," "Psychosocial Consultation on Renal Dialysis and Transplantation," "Activities of Social Work Department of Children's Hospital, Washington, D.C." and "Outpatient Services of Veterans Administration."

The major professional activities of staff members are listed in the appendix. As in previous years, the activities reflect a wide range of professional expertise among the department's staff members and recognition by other professional groups at both a local and national level. These activities were essential to keep staff abreast of new ideas and changes elsewhere in practice and to generate understanding by others of our own staff's rather specialized function in a research and treatment center. In addition to serving as speakers and consultants at professional meetings for both social work and other disciplines, several staff members were active in volunteer work for community philanthropic groups and served on boards and committees of local hospitals and social agencies.

The department again enjoyed a good level of support for travel and attendance at professional meetings. Eleven of the professional staff attended an out-of-town meeting. Professional meetings attended included the American Association for Child Care in Hospitals, National Conference on Social Welfare, American Group Psychotherapy Association, Inc., National Kidney Foundation Symposium, Workshop on the Delivery of Social Work Service in Pediatric Hospitals, American Psychosomatic Society, American Society for Hospital Social Work Directors of the American Hospital Association, and a wide variety of professional meetings in the local community. One staff member attended a 10-day graduate seminar at Smith College School of Social Work, Northampton, Massachusetts, in June 1972.

The Staff Education Committee was reactivated in February 1972 and took responsibility for planning ongoing staff education meetings and workshops on topics of special interest. A Journal Club was also established with most of the staff participating.

Four Program Supervisors completed Part I of the Clinical Center Supervisory Management Course, thereby meeting the Civil Service requirements for the "experienced supervisor" under the Supervisory Program sponsored by the Civil Service Commission.

In September 1970, the department achieved a long-standing goal of becoming a field work training agency for students from graduate schools of social work. This year, a second year graduate student from the National Catholic School of Social Service was supervised by Miss Mary Dean Aber, Heart Social Work Section. As this was her first experience in supervision, consultation was provided by the Assistant Chief, Miss Barbara A. Murphy.

PRACTICE ORIENTED STUDIES AND PUBLICATIONS

Research activity was sharply curtailed, and the increased service demands and responsibilities required the interruption of several projects. This was the first year since 1956 in which there were no publications from our department.

Miss Roberta E. Peay, Heart Social Work Section, and Dr. Donald Detmar, now at Duke University, continued their study of 27 postoperative cardiac patients' subjective evaluation of their physical and social functioning.

Miss Mary Dean Aber, Heart Social Work Section, participated in a "Coronary Intervention Study" with Dr. Robert Levy and Dr. Stephen Epstein as principal investigators. This may be a five-year study to evaluate over 200 patients with coronary artery disease, Type II, Hyperlipoproteinemia. Patients will be hospitalized twice for evaluation, including angiography. The social worker developed a detailed interviewing schedule for data collection which was utilized for evaluating significant social factors and their possible relationship to the illness. Patients will be interviewed again during their rehospitalization and certain areas will be reassessed for change.

For several years, Miss Evelyn Walker, Chief, Neurology Social Work Section, has represented the department as a member of a panel of abstractors who write abstracts of professional journal articles of interest to social workers for the quarterly journal, Abstracts for Social Work, a publication of the National Association of Social Work. Currently she is responsible for abstracting articles from The American Journal of Psychiatry and The Journal of Nervous and Mental Diseases.

STAFF PROFESSIONAL ACTIVITIES

Miss Mary Dean Aber

Field Work Instructor, School of Social Work, The Catholic University, Washington, D. C.

Miss Loretta A. Coughlin

Registrar, Eastern Regional Institute, National Association of Social Workers, Washington, D. C., October 24-27, 1971, "Human Sexuality: Implications for Social Work Practice and Organizational Change."

Mrs. Kathryn K. Himmelsbach

Member, Inter-Agency Services Conference
The Health and Welfare Council, Washington, D. C.

Member, Committee on Legal Rights for Children
The Health and Welfare Council, Washington D. C.

Member, Ladies Board
Georgetown University Hospital, Washington, D. C.

Keyman, National Association of Social Workers
Washington Metropolitan Chapter.

Social Work Department Liaison with Clinical Center Red Cross Volunteers.

Panelist for an Institute on "Psychological Impact of Cancer," at Johns Hopkins University Hospital, sponsored by The American Cancer Society, Maryland Chapter, Baltimore, Maryland, November 1971.

Mrs. Lucia N. Mason

Chairman and Instructor, Sociology Department
Secretary to the Board of Directors
Member, Publicity Committee
Washington Saturday College.

Miss Marjorie E. McKinney

Panelist at Third Annual Nurses Seminar "Psychological Impact of Cancer on the Child Patient," sponsored by The American Cancer Society, Cheverly, Maryland, February 1972.

Member, Program Committee, American Association for Child Care in Hospitals, Washington Metropolitan Chapter.

Program Chairman, Medical and Health Services Council, Washington Metropolitan Chapter, National Association of Social Workers.

Member, Ad Hoc USPHS Subcommittee on the National Health Service Corps.

Miss Barbara A. Murphy

Panelist in two sessions of a Workshop for Head Nurses on "Community Health Resources," sponsored by the Clinical Center Nursing Department on February 2 and 9, 1972.

Miss Linda E. Nee

Executive Committee, Medical and Health Services Council, Washington Metropolitan Chapter, National Association of Social Workers.

Chairman, "Committee for Medical Services for Families," Medical and Health Services Council, Washington Metropolitan Chapter, National Association of Social Workers.

Social Work Coordinator, Anacostia Center for Medical Services, Washington, D. C.

NINDS Clinical Review Committee.

Miss Roberta E. Peay

Consultant, Social Work Service, Walter Reed Army Hospital, Washington, D. C.

Mr. John F. Roatch

Chairman, The Metropolitan Washington, D. C., Chapter of the Society for Hospital Social Work Directors.

NIH Bureau Representative for the Evaluation, Selection and Placement of Applicants for Appointment in the Commissioned Corps.

Member, DHEW Grievance Review Officer Panel.

Member, Executive Committee, Council on Social Work in Medical and Health Services, Metropolitan Washington Chapter, National Association of Social Workers.

Consultant, Social Work Service, Walter Reed Army Hospital, Washington, D. C.

Member, Temporarily Assigned January 31 to June 1, 1972, New Management Initiatives Team, Federal Assistance Review Task Force (FAR), Office of the Secretary, DHEW.

Mrs. Wilma E. Scheuren

Member, Patient Aid Committee, Leukemia Society of America, Inc., Greater Washington Chapter.

Miss Evelyn Walker

Member, Women's Board, Columbia Hospital, Washington, D. C.

Member, Abstract Committee, National Association of Social Workers.

Equal Employment Opportunity Counselor for a three-year term, 1971-1974.

Serial No. CC-39
Social Work Department
The Clinical Center
Bethesda, Maryland 20014

PHS-NIH
Individual Project Report
July 1, 1971 through June 30, 1972

Project Title: Does Surgical Success in Children with Heart Disease in the Latency and Adolescent Age Groups Result in Significant Positive Changes in Social Functioning.

Previous Serial Number: None

Principal Investigator: Barbara A. Murphy

Other Investigators : None

Cooperating Units : Clinical social workers assigned to Cardiology Branch, NHLI

Man Hours:

Total	:	150 Hours
Professional	:	150 Hours
Other	:	0 Hours

Project Description: Objectives - The purpose of this study is to learn whether children who have been physically improved by cardiac surgery experience concomitant changes in social functioning as measured by their ability to perform age-appropriate tasks before and after surgery.

The project studied the functioning of two groups of children: (1) 67 latency aged (6 through 10 years); and (2) 40 adolescent aged (14 through 17 years), who were admitted to the Clinical Center by the National Heart and Lung Institute between January 1965 and January 1970.

Method - The developmental theories of Freud, Erikson, Josselyn, and Lidz were used as a frame of reference for determining the significant life tasks of childhood. The theoretical developmental tasks were translated into a series of perceivable behaviors. From these a schedule was devised, containing a series of questions concerning life tasks as they related to latency and adolescence.

The children were used as the primary source of data. The schedule was administered in an interview situation at two different points of time--before surgery, and following a medically appropriate period after surgery. A supplementary schedule for the available parent was also administered in an interview situation at two different points in time--prior to and following surgery.

Does Surgical Success in Children with Heart Disease in the Latency and Adolescent Age Groups Result in Significant Positive Changes in Social Functioning

Schedules to provide medical information related to (1) the patient's functional capacity preoperatively and postoperatively; (2) whether corrective or palliative surgery was performed; and (3) the surgeon's judgment as to those patients whose cardiac status was improved.

Measurement was predicated upon the development of a social functioning scale of sufficient reliability to assess task-behavior in relation to chronological age. Rating Scales were developed to tap four types of behavior: (1)interests and activities; (2) child-family interaction; (3) decision making-autonomy; and (4) the child in relation to self and peers. Conceptual bases for scaling each type of behavior were derived from the psychoanalytic literature, particularly the more recent work of Anna Freud. Gesell and Ilg provided rich source of behavioral concomitants.

Findings - Preliminary Testing of these scales on half the latency group indicated that these children appear not to have marked problems in social functioning. "Interests and activities" level and "autonomy" for the group as a whole, appeared to be less than one year below a theoretical expectancy, with activities related "to family and to peers" being at approximately one year lower than considered appropriate.

Methodologically, reliability of these measurements with the same judges is adequate; however, test reliability from one set of judges to another must be completed before further substantive findings are elucidated.

TABLE 1
INPATIENT COVERAGE BY PERCENTAGE
July 1971 through March 1972

INSTITUTE	TOTAL IN-PATIENTS CENSUS	IN-PATIENTS SERVED	PERCENT COVERAGE
NCI	1,938	1,273	65.7
NHLI	1,365	1,202	88.1
NIAID	476	262	55.0
NIAMD	563	498	88.5
NINDS	861	646	75.0
T O T A L	5,203	3,881	74.6

TABLE 2

NUMBER OF CLIENTS PROVIDED WITH SOCIAL WORK SERVICES

July 1971 through March 1972

SOCIAL WORK SECTION	PREADMISSION (1)		INPATIENT (2)		CLINIC (3)		FOLLOW-UP (4)		TOTAL	
	CC PATIENT	FAMILY MEMBER	CC PATIENT	FAMILY MEMBER	CC PATIENT	FAMILY MEMBER	CC PATIENT	FAMILY MEMBER	CC PATIENTS	FAMILY MEMBER
1971 JULY	6		433		11		93		543	
		4		301		5		53		363
AUG.	1		442		10		72		525	
		1		313		3		45		362
SEPT.	4		440		5		115		564	
		3		284		1		58		346
OCT.	1		447		10		92		550	
		0		240		5		41		286
NOV.	5		412		7		98		522	
		4		213		4		46		267
DEC.	2		382		18		91		493	
		0		225		1		31		257
1972 JAN.	2		421		13		121		557	
		1		233		6		37		277
FEB.	5		432		10		98		545	
		1		223		4		47		275
MAR.	4		472		22		121		619	
		0		270		7		65		342
TOTAL	30		3,881		106		901		4,918	
		14		2,302		36		423		2,775

(1) PREADMISSION - Service between acceptance for project and admission.

(2) INPATIENT - Person occupying a Clinical Center bed at anytime during the month.

(3) CLINIC - Service where patient has never been an inpatient.

(4) FOLLOW-UP - Service to former inpatient.

TABLE 3
GROUP ACTIVITY REPORT
July 1971 through March 1972

SECTION	RESEARCH ACTIVITIES		PRACTICE-PROGRAM ACTIVITIES		SOCIAL WORK DEPARTMENTAL ACTIVITIES		COMMUNITY AND PROFESSIONAL ACTIVITIES		TOTAL HOURS
	HOURS	%	HOURS	%	HOURS	%	HOURS	%	
NCI	2	0.1	988	52.1	677	35.7	228	12.1	1,895
NHLI	30	2.6	545	46.7	522	44.8	69	5.9	1,166
NIAID NIAMD	17	2.5	511	75.9	126	18.8	19	2.8	673
NINDS	6	0.9	398	61.1	180	27.7	67	10.3	651
TOTAL	55	1.3	2,442	55.7	1,505	34.3	383	8.7	4,385

TABLE 4
NIH PATIENT EMERGENCY FUND EXPENDITURES
July 1971 through March 1972*

MONTH	SPECIAL PROGRAMS	PATIENT TRANSPORTATION	ALLOWANCE TO RELATIVES	PATIENT MISCELLANEOUS	BASIC NECESSITIES	TOTAL WITHDRAWN	TOTAL DEPOSITS
1971 July	$ 883.54	$ 168.75	$ 1,456.80	$ 235.82	$ 226.00	$ 2,970.91	$ 2,450.50
August	482.00	161.70	1,515.60	332.80	238.00	2,730.10	2,049.30
September	482.25	313.50	2,373.90	361.38	192.50	3,723.53	971.49
October	278.25	111.45	2,160.00	309.22	226.00	3,084.92	1,291.72
November	187.28	23.50	1,280.25	210.19	188.00	1,889.22	965.05
December	396.75	241.10	1,127.75	152.48	239.00	2,157.08	6,499.21
1972 January	481.80	91.40	1,357.00	109.70	179.00	2,218.90	3,006.88
February	494.30	334.60	1,482.00	155.26	196.00	2,662.16	4,346.63
March	402.55	282.45	1,288.85	74.34	255.00	2,303.19	1,161.48
April							
May							
June							
TOTAL	$ 4,088.72	$1,728.45	$ 14,042.15	$1,941.19	$ 1,939.50	$ 23,740.01	$ 22,742.26

SW-21

RECAPITULATION

Balance brought forward July 1, 1971	$ 13,784.47
*Fiscal Year 1972 - Deposits	22,742.26
	$ 36,526.73
*Fiscal Year 1972 - Withdrawals	23,740.01
TOTAL	$ 12,786.72

TABLE 5
NIH PATIENT EMERGENCY FUND EXPENDITURES
July 1970 through June 1971

MONTH	SPECIAL PROGRAMS	PATIENT TRANSPORTATION	ALLOWANCE TO RELATIVES	PATIENT MISCELLANEOUS	BASIC NECESSITIES	TOTAL WITHDRAWN	TOTAL DEPOSITS
1970 July	$ 230.50	$ 92.00	$ 1,443.55	$ 208.55	$ 141.00	$ 2,115.60	$ 1,068.34
August	566.85	191.00	1,104.45	344.50	158.00	2,364.80	734.50
September	379.75	180.85	1,191.50	554.10	195.00	2,501.20	1,381.17
October	80.04	224.20	1,028.75	285.01	160.00	1,778.00	1,097.75
November	108.50	188.35	904.00	557.64	163.00	1,921.49	1,203.66
December	181.95	275.90	1,526.40	473.24	228.00	2,685.49	5,008.32
1971 January	159.25	133.00	1,682.00	458.98	217.00	2,650.23	2,086.15
February	107.50	122.20	1,308.00	371.55	275.00	2,184.25	1,604.18
March	135.55	304.15	1,352.00	347.81	303.00	2,442.51	322.00
April	248.00	188.53	1,629.00	349.04	267.00	2.681.57	1,312.70
May	379.75	119.35	1,906.60	339.88	264.00	3,009.58	496.00
June	733.25	109.15	2,484.00	230.44	359.00	3,915.84	1,414.20
TOTAL	$ 3,310.89	$2,128.68	$ 17,560.25	$ 4,520.74	$ 2,730.00	$ 30,250.56	$ 17,728.97

RECAPITULATION

Balance brought forward July 1, 1970	$ 26,306.06
Fiscal Year 1971 - Deposits	17,728.97
	$ 44,035.03
Fiscal Year 1971 - Withdrawals	30,250.56
TOTAL	$ 13,784.47

TABLE 6

NIH PATIENT EMERGENCY FUND INCOME
CONTRIBUTIONS F.Y. '68-'72

* Amount of contribution is only for the first nine months of F.Y. 1972

July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

DEPARTMENT OF SPIRITUAL MINISTRY

CC-40
Serial No.

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July 1, 1971, through June 30, 1972

PUBLIC HEALTH SERVICE, NATIONAL INSTITUTES OF HEALTH

SUMMARY ANNUAL REPORT OF PROGRAM ACTIVITIES
CLINICAL CENTER

DEPARTMENT OF SPIRITUAL MINISTRY

CC-40
Serial No.

OVERVIEW

During FY 1972, the department's fundamental goal continued to be a spiritual ministry to patients and their families and to hold religious services in the chapel. It also acted as a liaison with religious groups not represented by the staff chaplains and conducted a training program and research in hospital ministry.

Members of the staff remained the same as last year: Chaplains Kerney, Robey, White, Father Guicheteau, and Rabbi Kleinberg. Father Guicheteau was assisted during his convalescent period by Father John Blandin, S.J. Mother Mooney, a Roman Catholic nun, visited selected Catholic patients as a volunteer. The staff was again augmented by five Army chaplains enrolled in a year's program of clinical pastoral education, beginning in September 1971. These men, Chaplains Burttram, Campbell, Howerton, Magalee, and Kolberg, were assigned to the Clinical Center for this study program as a part of their career development. The professional experience and the personal maturity that these five men contributed added greatly to the coverage and total program of the department.

Much of the work of the department does not lend itself to quantifying or even reporting. Much of this activity may simply be called "humanizing the research situation." Sharing a friendly word, listening to a frustrated or hurt patient, encouraging trust in the doctor, supporting the request for an autopsy, and exploring the meanings of the patient's hospital experience--all were attempts to support the patient. Sometimes the efforts were made to "defuse" the anger and hostility of members of the family. Concern and support were expressed for other members of the professional staff who were particularly involved with patients and their families. Words of appreciation and letters of thanks from patients and their families all point to the importance of this effort.

A Parents Sharing Group was formed again this year to give support to parents, mostly mothers, of children on the 2-East nursing unit. This group was conducted by two Army chaplains. The project was reported at the fifth symposium of the Foundation of Thanatology at Columbia University this spring. Two articles, one describing the clinical pastoral training program, and the other articulating some of the religious dimensions of the work of the Clinical Center, were published in the April issue of Pastoral Psychology.

The religious preferences of the patients admitted to the Clinical Center remained the same: Protestant, 70 per cent; Roman Catholic, 23 per cent; and Jewish, 6 per cent. More attention was given to the patients in the clinics with more programming needed in this area.

CHAPEL SERVICE

Regular chapel services were held during the year for the major faith groups. These services were:

Protestant: Sunday, 10:00 a.m. Holy Communion Service, the first Sunday of each month.

Catholic: Sunday, 8:30 a.m.; weekdays, 11:15 a.m. Daily distribution of Communion to bedridden patients.

Jewish: Friday, 4:00 p.m.; Saturday, 9:30 a.m.

In addition to these regular services, special services were also held, including:

Protestant: World Wide Communion--1st Sunday in October
Thanksgiving Day Service
Christmas Carol Service
Maundy Thursday Communion Service
Good Friday Service

Catholic: Holy Days of Obligation--two masses
Special Blessing of Throats--February 3
Distribution of Ashes--Ash Wednesday
Stations of the Cross--Fridays during Lent

Jewish: Rosh Hashanah, Sukkoth, Purim, Shavuoth
Yom Kippur, Chanukah, Passover

Mrs. Lois Graham, who has played the organ for Protestant services since 1959, and for Catholic services during the last year, chose not to renew her contract. She was most responsible and helpful in her service to the Clinical Center. Mrs. Frances M. Viernstein took her place in August 1971.

The Interfaith Sunday School continued on the 2-East nursing unit with a positive response by staff, parents, and patients. The sessions emphasized aspects of religion shared by all, with attention also given to the heritag and tradition of each child that could be shared with the group. Attendance varied from three to five children each Sunday, with most youngsters falling in the 3-9 year age bracket. Written permission to attend was secured from the parent(s) of each child.

Chapel becomes an opportunity to help patients find a more adequate life style and philosophy of life to deal with the overwhelming threats of death and chronic illness.

As an example of this support to patients, one of the Army chaplains in the clinical pastoral education program preached a sermon entitled, "Overcoming the World." Using the scripture text, "In the world you will have trouble. But courage! The victory is mine; I have conquered the world." After discussing the posture of conquering the world by withdrawing from it, or the opposite of attacking it, he suggested that we conquer the world by living in the world with hope. He ended with a quote from a soldier whom he first met in basic training and then met several years later. "I felt like a little glass teapot back then. Sometimes I still feel like a little glass teapot, about to break into a thousand pieces. But if I do, God will have somebody around to help put me back together again. Right now, all God wants me to do is take things as they come, day by day."

Daily mass, scheduled at 11:15 a.m., was attended regularly by 5-15 persons, with up to 25 persons attending daily during Lent. The opportunity to attend mass in the chapel was deeply appreciated by patients and their relatives, particularly at critical times during their hospital stay. Services were broadcast over bedside radios for patients who were not able to be present in the chapel. A short sermon was preached daily.

Holy Communion was distributed to Catholic bed patients each day, starting at 9:30 a.m. About 25 to 45 bed patients received daily, in addition to those who received Holy Communion at the daily mass. Confessions were heard daily before mass. The Sacrament of the Anointing of the Sick was given frequently.

Many patients, both men and women, have expressed their great appreciation at the visits of Mother Mooney. When for some reason she has been unable to visit a specific patient for a couple of days, they often tell the chaplain, "Tell her not to forget to come and see me. I find her visits such a consolation."

Two Catholic children were baptized and two Catholic couples, whose "invalid" marriages were a source of worry to them, had their marriages rectified in the Catholic rite, a source of great consolation to them, since for years they had wanted this but did not know it was possible.

A ritual Service for the Passover was conducted in the chapel using the closed circuit broadcasting facility to reach patients confined to their rooms. Bedside visitations were made during the holy days. Matzoth (unleavened bread) was available on request during the entire week of Passover. Invitations to local homes were provided for members of patients' families who wished to participate in a Seder meal. Grateful appreciation was expressed for these concerns given to spiritual needs.

In addition to the Jewish services previously mentioned, special memorial services (Yizkor) were conducted as prescribed by Jewish tradition. These were open to employees of the Clinical Center enabling them to fulfill their religious obligation with a minimum of time away from their duty stations.

The pamphlet, "Prayers for Those Who Wait," authored by Rabbi Kleinberg, was printed and distributed appropriately. Its concern is directed to

those who stand by loved ones during critical times, and should provide comfort and strength to members of every faith.

GROUP WORK

The Parents Sharing Group was started again last fall by two of the Army chaplains. The group was composed of parents, mostly mothers, of children on the 2-East nursing unit. Attendance varied from week to week, depending upon who was in the hospital and in the clinic. The group met on Tuesday afternoon during the "quiet time" on the nursing unit. The range of "experience" of the parents ranged from "brand-new" to four and one-half years in treatment. The religious diversity ranged from none through a variety of Protestants and Catholics to a Greek Orthodox.

It seemed important to the participants to have a place to meet away from their children, to share and talk freely with people going through the same "valley of shadows." There was no attempt to impose on them a set of answers to their concerns. Rather, it was an attempt to offer openness and understanding. In many cases, there was a deliberate refusal to confront participants even when they sounded "crazy."

The concerns of the parents included finding an "explanation" of the "why" of their children's illness and impending death. The group discussed what they thought death was like, what children think, and what parents should and should not tell their children. A common theme was their worry about the unknown and how to prepare themselves. Other themes included theological concepts such as heaven, hell, punishment, and what is the good life.

Many of these worries were expressed through the sharing of a collage with other members of the group. No one, even the person themselves, fully knew the meaning of the pictures they shared with the other members of the group, but they felt that their "hopes and fears" were accepted by others, and thus could be better accepted by themselves.

This method of helping parents deal with the problems of terminal illness, questions of faith and meaning, and having a need to share with others and find a sense of community was shared in a workshop by Chaplain Kerney and Chaplain Danny Burttram at the fifth symposium of the Foundation of Thanatology at the Columbia Medical Center, New York City, on April 14.

PASTORAL MINISTRY TO PATIENTS AND THEIR FAMILIES

The heart of the work of the Department of Spiritual Ministry continued to be the ministry to individual patients and their families. Patterns of ministry varied according to the traditions of the major faiths. Pastor, priest, and rabbi, each had his unique approach to meet the spiritual needs of his patients. Methods in ministry also varied according to the ratio of patients to individual chaplains.

The department attempted, when possible, to have a staff member visit all patients prior to major surgery, patients who were on the seriously ill

list, and families of patients who died. Using March 1972 as a typical month, there were 47 major surgical operations, 15 seriously ill patients reported, and 10 expirations.

All Catholic patients were contacted through the sacramental ministry of the Catholic chaplain. The Jewish chaplain was able to see all the patients of the Jewish faith. Most of the Protestant patients were visited. Priority was given to the terminally ill, the seriously ill, and those scheduled for surgery. All referrals by staff, relatives, pastors, or self were seen. Clergymen from the community were called upon to minister to special patients, e.g., patients requesting special rites from a clergyman of their own denominations. These included several Greek Orthodox priests who were routinely called to minister to the Greek-speaking patients on the Heart Nursing Service.

Pastoral problems which the chaplains encountered included: loneliness, grief, fear, guilt, anxiety, loss of spiritual meaning, boredom, identity crisis, and changes in body-image and body-function. Pastoral methods included pastoral conversations, sacraments, blessings, prayer, scripture, and worship. On occasion, the chaplains were involved in helping patients and their families resolve dilemmas of conscience, conflicts of values, and difficulties in accepting radical therapies.

ILLUSTRATIONS OF PASTORAL MINISTRY

> "We were visiting together on the unit. Mrs. S. was somewhat depressed. It was several days before the first festive light of Chanukah and she would have to remain in the hospital even though home was Silver Spring, Maryland.
> "For the first time in many years she would not be able to host the family gathering on this occasion. When her six-year-old granddaughter lamented the fact, it nearly broke her already damaged heart.
> "As she told me the story, there was a lump in her throat and tears in her eyes.
> "'I think I can help,' I said, 'If your family is willing to come here, we could all meet in my office, light the candles at my personal altar, share the family festivities, and you can host the occasion.' She was overcome with joy and burst into tears of happiness.
> "We met as planned and a time-honored tradition for the S. family continued unbroken. Needless to say, the experience was unique. It will remain a memorable first night of Chanukah for all of us."
>
> . . . .
>
> "We just don't know how to express our thanks for the consolation you gave our family when death was imminent for M. It helped so much to have you with us. The nun that was with us after M. passed away also treated us very warmly and was wonderful."
>
> . . . .

"Thank you for helping me so much. I will not forget your understanding my needs."

. . . .

"We are very grateful to you for your spiritual help before R.'s death and the mass offering since. Although R. was not a conversationalist, he told me he might have made his decision sooner if more priests were like you." [He had rejected his faith for a long time.]

. . . .

"We wish to thank you for your expression of sympathy. Your words were indeed a great comfort. You made me feel that you knew my husband well in such a short time."

. . . .

"Just a word of thanks to you for being so kind to me while I was at NIH. Bringing our dear Lord to me in my room meant so very, very much. It really helped me through the days. And your kind jovial visits in the afternoon gave me much pleasure."

. . . .

"I want to thank you most sincerely for your kind attention and spiritual help during my lengthy stay at NIH. It was indeed a most pleasant surprise to find a priest in regular attendance at a non-Catholic hospital. Certainly you are largely responsible for much of the progress made by the Catholic patients and I, for one, am greatly indebted to you for all of your kindness and help."

. . . .

Among the many pastoral situations encountered by the chaplains during the year was a mother who felt guilty for requesting that her son be put in a laminar air flow room despite the fact that this was against her husband's desires. She felt angry toward her son in the flow room, who, as an adolescent, did not want a lot of mothering.

Another chaplain helped a patient think through the tension of belonging to a Christian Science Church and yet receive medical treatment at the Clinical Center.

Another situation involved a patient whose husband at home had been picked up on a rape charge. The patient shared with the chaplain the fact that the couple were now beginning to talk about their lives and their marriage, something they had never been able to do before. To share this with a chaplain and have the openness and the possibility of acceptance confirmed was very meaningful to the patient.

Another patient called for a chaplain on the weekend around midnight. The patient said, "The chaplain came and he was very nice. He talked to me

for a long time. The chaplain prayed for me, and I felt better. After he left, I was able to sleep. Most nights they have to give me pills to make me sleep." This patient died a few days later.

"On hearing a page for 7-East indicating a cardiac arrest, I went immediately to the nursing unit. It was 2 p.m. The nurse explained an arrest had unexpectedly occurred, the patient being a young man scheduled for heart surgery the following week. The patient's wife and his father were aware of what was wrong, had already signed for emergency surgery, and were waiting in the solarium to see the patient as he was rolled to the O.R.

"I went to them immediately and sought to help them cope with the shock they were experiencing. The young man had been ambulatory and generally healthy in appearance. The wife was very frightened and stunned. The patient's father was a stoic man, but was trying to support his son's wife as best he could.

"Suddenly the patient was wheeled down the hall on his bed. A surgeon was sitting on the side of the bed externally massaging his chest. The patient was very cyanotic and looked terminal.

"The family sat down in grief, believing their loved one was dead. I comforted them as best I could and offered a prayer of hope and encouragement.

"The next day the patient was most precarious and finally expired at 6 p.m. By then the family was resigned to the outcome. Unexpectedly a physician from the Eye Institute appeared to request the patient's eyes. I briefed him on the series of unforeseen shocks the family had endured the previous twenty-eight hours and the physician was responsive to this."

. . . .

"The patient was a young man of 21 scheduled for heart surgery. He had received preliminary surgery here in 1959. In the intervening years, his parents had divorced, married other spouses and in the turmoil of their lives left the patient troubled and alienated. He had been in and out of schools, drugs, and prison. He had not seen his father in three years.

"Though he claimed he was an atheist, I talked with him and wished him well. Later he came to my office to discuss numerous problems related to his family and personal life. Some of the material, if true, indicated possible psychiatric problems. I sought to understand him and support him, feeling that all this was related to his efforts at strengthening his courage for the surgery two days later.

"I explained the patient's situation with his ward physician who decided a psychiatric consult might be useful

to evaluate possible difficulties in managing the patient in the care room and post-operatively. The resulting consult indicated the patient's defenses were probably adequate to cope with the surgery, but follow-up visits by the psychiatrist were indicated.

"When the patient's mother and sister arrived the day before surgery, they were concerned that the patient's father would like to visit, but they were afraid to suggest this to him. The physician in charge of the unit asked if I would discuss it with the patient since he had talked more deeply with me than anyone else.

"At first, the patient was hostile to the idea of his father visiting him, but finally decided that possibly the life-threatening aspect of surgery might help all the family to some degree of reconciliation.

"The father did visit his son after he left the recovery room and the experience seemed meaningful to both of them."

PASTORAL TRAINING FOR CLERGY

The pastoral training program in the department was viewed as a complementary activity to the basic function of service to patients. While pursuing educational goals in the training programs, the trainees extended and enriched the service dimension of the total work of the department. The ongoing education program also enriched the ministry of the staff chaplains of all three faith groups through participation in joint seminars as well as through the stimulation provided by the trainees. It gave the Protestant ministry a wider range of denominational representatives as well as increased continuity of a particular chaplain with the same patient and his family over a period of time. Without such programs, and particularly the men who came for a "clinical year," the quality and quantity of pastoral services would have been reduced.

The third Intern Year program of clinical pastoral education in the Clinical Center concluded on July 30, 1971. Certificates were presented by Dr. Roger L. Black, Associate Director, at a tea honoring the five Army chaplains who successfully completed the course.

The Clinical Center began its fourth Intern Year of clinical pastoral education on August 30, 1972. Five Army chaplains were enrolled for the year and one Roman Catholic civilian priest audited the course for one quarter. The FY 1972 group of Army chaplains was highly productive in demonstrating the value of the ongoing professional and interdisciplinary sharing of pastoral care experiences. Having five very able chaplains engaged in the practice and study of the pastoral care of Clinical Center patients and their relatives made a significant impact on staff relationships with social workers, physicians and nurses who collaborated with these chaplains, especially in response to problem areas of patient care such as the care of the seriously ill and dying. The work of the Army chaplains also reinforced the findings of the staff chaplains regarding the importance to our patients of having already established a solid

relationship with the chaplain before the crisis days came. We have found that mere acquaintance with the chaplain is a weak support as compared with the confidence instilled in the patient by an ongoing pastoral relationship.

Consultation was given by Chaplains Robey and Kerney to interested individuals regarding programs of clinical pastoral education at the Clinical Center, and to clinical pastoral education students seeking informative and/or evaluative interviews. Continuing assistance was given during the year by Chaplains Robey and Kerney to area seminaries by interviewing their students applying for courses in clinical pastoral education. As the program of clinical pastoral education at the Clinical Center became better known nationally, an increasing number of persons sought to apply for a year's study in the Clinical Center. Very few of those interested were able to come as guest workers. In order to select the best qualified candidates for ministry to Clinical Center patients, it became increasingly desirable to have funds available to pay stipends to those participating in the program of clinical pastoral education.

The pastoral training program was a very meaningful project for the trainees and for patients, families, and staff members of the Clinical Center. It has been a project that has used the effective and efficient use of Chaplain Robey's time so that half or more of the time of the five Army chaplains was used in patient and family involvement.

The program has put the Clinical Center on the map as an excellent center for training and is highly regarded by the Chaplains Branch of the U.S. Army. Perhaps we have done too excellent a job. Because of a large group of men, some of our graduates, who are moving into advanced quarters as Supervisors, plus a new center of their own and reduction in training slots, we will not have a group of Army chaplains assigned to the Clinical Center this next year.

A report of the methods used in the program was published in the April 1972 issue of Pastoral Psychology, in an article by Chaplain Robey and Dr. Harold Greenberg of NIMH entitled "An Approach to the Education of Chaplains in a Clinical Research Setting."

Chaplain Robey served as Regional Chairman, Mid-Atlantic Region, Association for Clinical Pastoral Education, and was elected to the national Certification and Accreditation Committee.

WORK WITH STAFF

The Department of Spiritual Ministry participated in an orientation program for the Red Cross Hospital Volunteers. An orientation seminar was held for several new members of the Social Work Department and for personnel in the Patient Activity Section. A number of staff persons lectured, or were members of panels, in the instructional program for the Army chaplains.

Much of the work with staff took place on an informal, routine level when consulting with other staff personnel, exchanging information at the

nursing stations, discussing concerns during luncheon periods, occasionally making "rounds" with the staff physicians, and attending clinical conferences.

WORK WITH OTHER INSTITUTIONAL CHAPLAINS

As Past President of the College of Chaplains, a division of the American Protestant Hospital Association, Chaplain Kerney hosted the new members' reception at the annual meeting of the College held in Chicago March 5-9. He received a plaque honoring his services as a member of the Board of Trustees of the American Protestant Hospital Association.

Chaplain Robey served as a member of the Commission on Chaplains and Related Ministries of the United Methodist Church.

During the year, members of the Department of Spiritual Ministry participated in a monthly seminar with the chaplains of the National Naval Medical Center and Walter Reed Army Medical Center.

PROFESSIONAL MEETINGS (Chaplaincy)

Annual Conference
Association for Clinical Pastoral Education, Inc.
San Francisco, California -- Chaplains Kerney and Robey

American Protestant Health Assembly and
College of Chaplains
Chicago, Illinois -- Chaplain Kerney

National Certification and Accreditation Committee
Association for Clinical Pastoral Education, Inc.
Chicago, Illinois -- Chaplain Robey

Mid-Atlantic Regional Annual Meeting
Association for Clinical Pastoral Education, Inc.
Hampton, Virginia -- Chaplain Robey

Chaplains Monthly Seminar with chaplains from
National Naval Medical Center and
Walter Reed Army Medical Center
Held at Clinical Center, NNMC, and WRAMC -- Chaplains Kerney, Robey, White, Kleinberg, Burttram, Campbell, Howerton, Magalee, Kolberg

PROFESSIONAL MEETINGS (Ecclesiastical)

Consultation on an Office of Specialized Ministries
Board of National Missions
United Presbyterian Church in the U.S.A.
Pittsburgh, Pennsylvania -- Chaplain Kerney

The United Presbyterian Church in the U.S.A.
National Capitol Union Presbytery
Monthly Meeting of the Ministerial Relations Committee
Washington, D.C. -- Chaplain Kerney

Council of Churches of Greater Washington
Pastoral Care and Counseling Committee
Committee for D.C. General Hospital Chaplaincy
Washington, D.C. -- Chaplain Kerney

Endorsement Committee
United Methodist Commission on Chaplains and Related Ministries
Washington, D.C. (three meetings) -- Chaplain Robey

West Virginia Conference of the United Methodist Church
Annual Meeting
Buckhannon, West Virginia -- Chaplain Robey

Commission of Chaplains and Related Ministries
United Methodist Church
Semi-Annual Meetings
Arlington, Virginia, and Norfolk, Virginia (two meetings) -- Chaplain Robey

United Methodist Chaplains Retreat
Buck Hill Falls, Pennsylvania -- Chaplain Robey

General Conference of the United Methodist Church
Quadrennial Meetings
Atlanta, Georgia -- Chaplain Robey

The Presbyterian Church in the U.S.
Presbytery of Potomac (three meetings)
National Capitol Union Presbytery (six meetings) -- Chaplain White

Synod of Virginia
Presbyterian Church in the U.S.
Annual Meeting, Massanetta Springs, Virginia
Restructuring Meeting, Lexington, Virginia -- Chaplain White

Task Force on Women
National Capitol Union Presbytery
Washington, D.C. (six meetings) -- Chaplain White

Nominating Committee
National Capitol Union Presbytery
Washington, D.C. (six meetings) -- Chaplain White

Tower Scholar - Union Theological Seminary
Richmond, Virginia (two weeks) -- Chaplain White

LECTURES

Washington Cathedral - Panel Discussion for Clergy
"Moral Aspects of Abortion"
Washington, D.C. -- Chaplain Kerney

Messiah College - Clergy Conference
"Christ and the Developing Self," and
"Christ and the Dying Self"
Grantham, Pennsylvania -- Chaplain Kerney

American Cancer Society
"Cancer in Children" - member of a panel
Prince George's Hospital -- Chaplain Kerney

Veterans Hospital
Clergy Conference - "Ministering to the Dying Patient"
Washington, D.C. -- Chaplain Kerney

Columbia University and the Foundation of Thanatology
Fifth Symposium and Workshop on "Anticipatory Grief"
"A Parents' Sharing Group - A Methodology" (paper)
New York, New York -- Chaplains Kerney and Burttram

Presentation of material on Death and Dying to group of 10 student nurses in a program sponsored at the Clinical Center by the American Cancer Society -- Chaplain Robey

Spoke at Walter Reed Army Hospital to the graduating class of Army chaplains completing a course in clinical pastoral experience -- Chaplain Robey

Washington Saturday College
Social Science Department
"Religion and Prejudice"
Washington, D.C. -- Chaplain White

TEACHING

George Washington University
Master's Program in "Religion and Medical Care"
Two courses in "Advanced Pastoral Counseling" -- Chaplain Kerney

PUBLICATIONS

Kerney, L. G.: By the Pools of Bethesda. J. Pastoral Psychol., Vol. 23, No. 223: p. 35 - p. 40, April 1972.

Robey, R. B. and Greenberg, H. A.: An Approach to the Education of Chaplains in a Clinical Research Setting. J. Pastoral Psychol., Vol. 23, No. 223: p. 22 - p. 34, April 1972.

COMMUNITY CONTACTS

Members of the Department of Spiritual Ministry had numerous contacts with nearby churches, parish clergy, hospital chaplains, visiting doctors, and other professional persons.

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